

# AVIATION WEEK

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JULY 19, 1948



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## THE AVIATION WEEK

### Longer Life for Feederlines

The national experiment in short-haul air transportation appears headed for a fairly long life, if not an entirely happy one.

Despite rising criticism from an economy-minded Congress and a cost-conscious Post Office Department, most feederlines have an excellent chance of proving their three-year lease on life. Although worried by the many instances of high subsidies and low traffic volume, the Civil Aeronautics Board has shown no indication that it will abandon the short-haul networks as a bad job.

#### Certificates Expire in 1949.

Unless extended, the temporary certificates of seven of the ten currently active feederlines will expire by the end of 1949. And in three of the seven cases, a decision must be reached before next April.

Best indication of CAB's feeder policy will come in pending investigations to determine whether the certificates of Monarch Air Lines and Challenger Airlines should be extended for a year. Without revision, both certificates are slated to expire May 31, 1949.

Another straw in the wind will be the Board's attitude toward enlarging existing feeder systems. Almost all of the active feederlines are seeking major route extensions. CAB would be unlikely to grant any new service to a carrier it might put out of business soon afterward.

#### Critics Leave CAB.

Prospects that most feederlines will receive certificate extensions imposed automatically with the departure from the board of Clarence Young and Harlow Beach. As early as November, 1946, Young made clear his concern over establishment of additional short-haul operations, arguing that his colleagues were tending to authorize feeder service considerably beyond the scope necessary for an experiment. And before his retirement this spring, Beach suggested that some of the feeder routes scheduled or even suspended service entirely on some of their hubs because of high costs and inadequate traffic.

There are indications that the current membership of CAB would like to extend most of the three-year feeder certificates to five years. Such a move was urged both by the President's Air Policy Commission and by the Congressional Aviation Policy Board.

At least two members of the five-man Civil Aeronautics Board—Chairman Joseph J. O'Connor, Jr., and Jack Leo—are likely to view broadly their responsibilities regarding feederlines. They would have little difficulty in interpreting the declaration of policy in the Civil Aeronautics Act of 1938 as a mandate for the permanent establishment of short-haul air transportation. The declaration goes as far as the Board's first duty "the encouragement and development of an air transportation system properly adapted to the

present and future needs of the foreign and domestic commerce of the United States, of the postal service and of the national defense."

Although Congressional investigations undoubtedly again will focus a spotlight on the high subsidies required by the short-haul operators, there is little likelihood that the death penalty will be demanded with any degree of unanimity when feeder certificates come up for renewal. Congressmen now receiving local service will fight hard to keep it, and they will make their wishes known on Capitol Hill.

Meanwhile, the less active feederlines have become a significant factor in the overall domestic air transportation picture. The ten—Pioneer, Trans-Texas, Piedmont, Wisconsin Central, Challenger, Monarch, Southwest, West Coast, Empire and Florida—have assets aggregating close to \$10,000,000, around 2000 employees and over 50 transport planes.

By May, the feederlines were carrying a record 36,000 passengers monthly, with excellent chances of passing the \$2,000 mark by August. Professions the outlook is still bleak, the ten carriers losing around \$300,000 in the first quarter of the year. Deficits persisted through April and May.

#### Trunkline Opposition Continues.

Although their chances for survival appear good, the feederlines will continue to be harassed by their critics. Some of the biggest brickbats heaped at the short-haul carriers come from the trunklines.

One of the strongest attacks was recently launched by Eastern Air Lines against Florida Airways, the nation's smallest feeder, which has asked CAB for important extensions.

During oral argument on the case, Eastern's counsel charged that Florida's lease-overs and pay need last year was equal to \$181.09 for each seat mile of service rendered and \$66.68 for each passenger carried. By contrast, he said, EAL's seat pay was equal to 44¢ cents for each seat mile mile of service and 89¢ cents for each passenger carried.

Other trunklines have been more moderate in their attacks on the feederlines. But in several recent instances the trunk operators have joined the Post Office Department in asking CAB to withhold certificates.

The trunklines see a tendency for feeder service to compete with rather than complement long-haul operations, particularly since numerous promotional ploys based on short-haul certificates must be dropped because of inadequate traffic. Some observers feel, however, that trunkline management's major antipathy toward the feeder stems from the realization that both try the same source for seat pay funds. Trunkline officials believe CAB and the Post Office could afford to be more liberal with their annual rates were the feeder out of the picture.

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## NEWS DIGEST

### DOMESTIC

Mr. Gen. Ovil R. Cook has been named deputy director for procurement and industrial mobilization planning. An Major General, Wright Field, Dayton, Ohio.

Twenty jet fighters, including 14 Lockheed F-86s and six British de Havilland Venoms, prepared to accompany in General's jet work is a two-way contest of the Atlantic, the first by jet aircraft.

A Boeing B-47 bomber was upounded at Halifax, Nova Scotia, after it took off from Teterboro, N. J., on a reported navigation training flight and landed at Nova Scotia after engine trouble. There was reportedly distress for Palestine for out in the final battle against the Arab armies.

### FINANCIAL

Stewart-Warren Corp. announced net profit of \$902,094 or 70 cents per share on sales totaling \$47,818,552, for the first quarter ended Mar. 31. Corporate directors declared cash dividend of 25 cents per share on the \$5 par value common stock payable July 10, 1948, to stock of record June 30, 1948. American Cable & Radio Corp. showed net loss for 1947 of \$1,425,990. Operating revenues for the year amounted to \$21,514,941.

Trans-Canada Airlines reports a loss of \$1,762,800 for 1947 in spite of a 44 percent increase in passengers, 18 percent increase in air expense and a 19 percent decrease in revenue for the year. Atlantic operations provided a surplus of \$114,501 over operating costs. The loss is up over the loss a year ago of \$1,203,624. TCA earned 427,967 passengers, 1,439,814 lb. of cargo and flew 1,232,237 mail ton miles during 1947.

### FOREIGN

China National Aviation Corp. announced "interim" service between Rangoon, Burma and San Francisco using Douglas Skyraider transports. CNAC makes the flight in 51 flying hours with planes leaving Rangoon every first and third Thursdays.

Royal Dutch Airlines (KLM) reports an increase in passenger miles flown in the Caribbean area from 22,500,000 in 1946 to 31,573,000 in 1947. Passengers increased 50 percent from 50,200 to 75,500 and cargo shipments moved up from 107,830 lb. to 158,400 lb. Greater progress was in freight shipments, up from 785,000 lb. to 2,090,000 lb. Three Douglas DC-4 and six Douglas DC-3 transports are used over the 5960-mile network of routes.

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# AVIATION WEEK

July 19, 1948

## Huge U.S. Turboprop Program Under Way

**\$75,000,000 being spent to develop dozen engines that reach new peaks in power.**

By Robert McEwan

World leadership for the U. S. as the turboprop engine field is expected to reach a \$75,000,000 research and development program—kindly order may when the last product of the program, the world's most powerful turboprop engine, starts to fly in the spring of 1949.

Following this fast engine, competitors of which are now being tested, will be six other engine designs, many of them even more powerful.

■ **Donna Fossitt-Alexander** Wright has learned that both Air Force and Navy Bureau of Aeronautics are pressing work on more than a dozen projects, cyclized from the early planning of over two dozen submitted after V-J Day.

Navy is showing a clear edge in technical development of the units themselves, but Air Force is advancing more rapid progress in application of the new type of powerplant to products and combat engine installation.

■ **Farther Ahead**—Allison Division, General Motors Corp., is farthest advanced among the contractors on several projects including the powerful XT-40 unit dated for installation in the Navy Convair XP3Y-1 flying boat scheduled in 49 test flying. "XT-40" is one of the most powerful propeller-driven powerplants in the world, is actually two smaller units combined into a single engine. Each base unit may be combined to produce three, four or even six engines all geared to drive a single set of counter-rotating propellers.

Aircraft Navy contractor, Pratt & Whitney, is working completion on a multiple unit at the original P&W turboprop engine capable of delivering 7000 hp to propeller shafts. Third major Navy contractor, Chrysler Motors, has already delivered an experimental engine on its XT-36 project but is putting off about 1000 hp installation in from contribution as a powerplant for new combat types. It will be used for conventional testing.

■ **Wright Turboprops**—Leading Air Force contractor, Wright Aeronautical Corp., is already in production on its T-35 turboprop and also dated at 1949.

That unit was originally slated for installation in the Boeing XB-32, but this latter project may have been outmoded by the new Boeing XB-35 medium bomber, also using turboprop engines.

Air Force also is sponsoring development work on the Pratt & Whitney and Northrop-Cessna projects, both of which are still in preliminary stages. Both are 7500-hp units employing multi-stage compressors and turbine units and capable of producing with the static thrust of 375 mph, by the equivalent of 10,000 hp at 375 mph, by the greatest power ever achieved in a unit of such small size.

■ **Single Piston**—Navy turboprop is given point out that the problem of

turboprop development is basically one of developing gas turbine units. Therefore, it cannot be discussed from turboprop development in a separate line of effort. For this reason turboprop-turboprop assembly is fundamentally a single project with the fact that each particular project bears largely on engineering and design problems.

This can explain the so-called British "lender" in the turboprop field. Such nations have plenty ready to contribute toward research, the British applying results in turboprop engine products whereas the U. S. has applied those results to the turboprop engine over the past few years. This fact also is indicative of the leadership of turboprop companies in the turboprop field, a natural product of long gas turbine development.

■ **Leadership**—As the Air Force leads out with its original General Electric T-35 turboprop units (light tested in the Convair XP3Y-1 and Ryan XP3Y-1 aircraft), a second turboprop engine is considerably more than simply a single engine, with gas turbine units. Such a design encompasses leads to an engine installation that produces destructive vibrations.

General Electric has attempted to follow up two engines with the TG-110, an improved version, and the TG-120, a dual unit utilizing two TG-110 units, but has not with many difficulties. The Westinghouse T-35, a projected 3750-hp design, is expected to consist the 24C turboprop into a turboprop, also thrust a unit. Further indication of the intense competition in this field is the abandonment of the De Laval Navy project, which consisted of the De Laval turbine engine applied to the making of a gas turbine with a gear box.

■ **Shocking**—Bosch-Cummins and gear boxes are the major stumbling blocks in the turboprop field. Because of the slower speed of turboprop-powered aircraft, compression ratio must be maintained to provide the same pressure in the combustion chamber without the aid of ram pressure which is available in the straight turboprop aircraft.

Higher pressure ratios mean more stages, improved efficiencies or larger

compressors. This is a problem of design and engineering, not one of materials.

■ **Materials**—The materials problem is a major stumbling block in the turboprop field. Because of the slower speed of turboprop-powered aircraft, compression ratio must be maintained to provide the same pressure in the combustion chamber without the aid of ram pressure which is available in the straight turboprop aircraft.

Higher pressure ratios mean more stages, improved efficiencies or larger

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ness in the compressor, all difficult engineering problems due to their tendency to add excessive weight to the machine.

► **Fuel Saving:**—The fact that specific fuel consumption of a typical jet can be cut nearly in half by increasing the pressure ratio from five to four is indicative of the enormous advantages that are to be gained along this avenue.

If a pressure ratio of 16 could be attained, a specific fuel consumption of only 0.65 lb. fuel/lb. dry thrust in constant high-powered supersonic engines could be achieved.

► **Shrink Savings:**—Improvements in compressor efficiencies could provide a fuel savings of 10 to 20 percent in excess from 80 to 90 percent where used specific fuel consumption from 0.85 to only 0.35 lb. fuel/lb. dry thrust, the performance of the best of the turbojet engines and competitive with the present-day turbo-prop engine.

A major technical problem of the turbojet engine is the fact that its design must be coordinated closely with the design of the airplane in which it will be installed. Since the design criteria speed and design cruising altitude of the aircraft determine in large measure the compressor and the jet thrust to be obtained from the turbojet engine, both designs must be carefully coordinated. It will not be possible to select turbojet engines "off the shelf" for a new airplane, as in the case with reciprocating engines.

► **Advantages:**—Argued of the turbojet engine is the military services loss in its production of horsepower available high power, its low installation weight and its low losses in permitting "burned" installations. These factors combine to make the engine ideal for comparatively low-speed (330-500 mph), medium altitude (15,000-60,000 ft.) long-range installations such as the Navy's Lockheed P3V Neptune, Lockheed B40 Conquestors, Convair F4Y and the Air Force's new medium bomber and strategic transport designs. In all of these it is presently planned for installation.

However, turbojet leadership is being steadily challenged by the conventional engine, which offers superior low-range and high-altitude characteristics at a reduction in airplane speed and load-carrying ability.

But the compound engine is limited by power available from the recuperative engine to which it is attached. Power indications are that the 4,500-hp size is its feasible limit. The turbojet engine of tomorrow will be able to deliver more than twice as much, at 10,000 hp per unit, with developing bomb and transport with heavy tactical characteristics.

## National Held at Fault in Strike

Emergency board criticizes carrier's labor policies. Offers proposal to end dispute, but report not binding.

Strike of National Airlines' pilots and ground personnel moved forward in a climax last week, as the carrier was assessed its policies in the light of a Presidential emergency board's finding that NAL's management had violated the Railway Labor Act.

In a report sharply critical of National's labor relations policies, the emergency board recommended reinstatement of discharged union pilots and relieving of striking strikers and mechanics. It also criticized the carrier's take the retaliator, and it was indicated to act only when confronted by the threat of a strike.

The board's subsequent proposals for settling the pilot dispute and offered by ALPA to end the strike, and the carrier's union to resume direct negotiations on an agreement affecting hours, wages and working conditions. The board's findings—While not binding, either the carrier or the union's board's report placed National Airlines in an extremely unfavorable position. NAL President G. T. Baker has apparently accepted the union's plan that first jobs are permanent.

The Air Line Pilots Association and the International Association of Mechanics, whose members have been on strike against NAL for nearly six weeks, were expected to accept the emergency board's recommendations last week.

But National has persisted in its chosen to ignore the board's suggestions. ALPA in September, 1946, rejected new rates and working rules proposed by a similar emergency board and struck. TWU, shortly thereafter, TWU had accepted the recommendations.

Control by President Truman on May 15 the NAL strike furthered more radical union strikes of public employees before ending its career. Panel consisted of Clyde Lewis, Wiley Rogers, Arthur W. Roll, former justice of the Indiana State Supreme Court, and William W. Schenck, Northwestern University law professor.

► **Issue Defined:**—The board said the sole issue between NAL and ALPA was inability to reach a deadlock over the Mexican G. T. Baker's decision over a NAL pilot and mechanic of ALPA. C. T. Baker was discharged after his Lockheed Lockheed was involved in a landing accident at the Tampa, Fla., airport in September, 1945.

The carrier's policy, which applied to certified airlines, depended on the carrier's responsibility of "maintain-

ing reasonable effort" to settle all disputes in order to avoid any interruption of consistently growing out of differences with employees. National Airlines, according to the five-member panel, did not carry out this duty.

"Over the entire period from the date of C. T. Baker's discharge on Sept. 27, 1945, to the date of the pilot strike—Feb. 3, 1946—every one of the many efforts to dispose of the dispute was interrupted by ALPA," the board declared. "It was indicated the carrier take the retaliator, and it was indicated to act only when confronted by the threat of a strike."

► **ALPA Defended:**—"What was sought by ALPA was reasonable. It did not seek reinstatement of C. T. Baker, but only an impartial determination of the propriety of his discharge. Such a determination has not been made to this date," the board stated.

"The board found that the carrier's strike, and responsibility rests with the carrier."

The emergency group recommended that the C. T. Baker dispute be finally settled through National's system based on adjustment (in which cases and company members had decided previously) supported by a neutral member to be appointed by the National Mediation Board.

► **IAM Dispute:**—In its dispute with the International Association of Mechanics, National said unable to negotiate an agreement governing rates of pay, hours and working conditions. The principal point of difference was a provision relating to the right of the carrier to subcontract work.

The board made a finding that National has repeatedly violated the National Labor Relations Act in its treatment of its ground employees by IAM and charged the carrier had irresponsibly and deliberately violated the national labor act in so doing.

"By its unilateral action concerning matters properly the subject of collective bargaining, National violated the duty imposed upon it by statute," according to the emergency board.

► **Relieving Unpaid:**—The board urged reinstatement of National's clerks and mechanics who had gone on strike and were replaced by new employees hired by the pilot—was a "permanent" basis.

It also said that the pilots should defer consideration of negotiating work until other areas are settled. IAM had threatened that National should not be permitted to hire or discharge with union or non-union status. National insisted an unreasonable rights in the matter.

## Berlin Airlift

U. S. support centered at Westover Field, far from the scene.

WESTOVER FIELD, MASS.—This quiet air base has played a vital though remote part in one of the biggest post-war logistics problems—the airlift of food and supplies to Berlin.

Trucks and ice went for more than 143 GSA, it has processed more than 143 tons of cargo enroute for Germany, none of it food. Instead, the planes carried spare aircraft parts, maintenance equipment and other necessities.

It was a June 27 radio broadcast, not an Air Force chyron, that informed the base that planes from Texas, Alaska and Hawaii would use Westover as their way to join the small number of Army G-4's already carrying cargo in the European theater.

► **First Trip:**—That day, after departure from Bergstrom Field, Texas, the first G-4 flew with the control tower at Westover on the last leg of the trans-Atlantic trip. An officer sent from Westover to Washington has details and off-

icial orders returned with the stay. Since supply shortages for this type aircraft were low in Germany, no delays throughout the country would be made.

Westover has not yet processed any aircraft returning to the U. S. from the Berlin airlift project. It has finished the job for the first time.

Parts of the base went on 24-hour duty, the most working 18 hours at a stretch to unload and load aircraft. Dispatches at San Antonio, Texas, and Midway, Pa., were forwarding spare parts to Westover as fast as they could get there.

► **Assembly Call:**—In New York, meanwhile, the Air Force assembled district-wide, hydraulic and popper specialists, electricians and other technicians, and flew them to Frankfurt.

In Germany, the G-4 pilots landed no easy mission. Tangled American baggage of the airlift battle, as in the middle of Berlin. Encountering it required high enough to move concern to pilots attempting bad weather landings.

Unusually with today's technology

developed to land at Tempelhof, new pilots required instruction from their duty at the base.

Westover has not yet processed any aircraft returning to the U. S. from the Berlin airlift project. It has finished the job for the first time.

## ICAO Openings

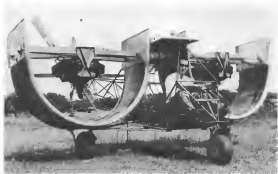
International Civil Aviation Organization wants applications from all its member states for aerial sea openings in the Caribbean.

The position, which will be filled from as many different countries as possible, are possibly for duty in Miami. Candidates must have a working knowledge of either English, French or Spanish.

Applications may be directed to the Air Coordinating Committee, Department of Commerce Building, Washington, D. C. Deadline is Sept. 1, 1946.

## 1000 Fireflys

From Co. Middlesex, England, will turn out 10,000 Fireflys this month. The plane, a Mk. V version, is currently used by the Royal Canadian, Netherlands and Australian services.



FIRST PHOTO OF NEW CHANNEL WING

Using a new improved design of direct channel wing, Wilbur C. Carter, Hampton, Md., inventor, is conducting first flight tests on his second channel wing airplane at Hampton airport. Plane is

powered with two 75-hp. Inverting on gas turbine engines capable peak power. Propellers mounted at end of channels due to through the channels to create lift. First flight tests scheduled high

MP possible with the device. More extensive demonstrations will follow after the aircraft fuselage has been created and assembled. First channel wing aircraft was demonstrated at Del Rio, Tex., in 1945.

## George W. Lewis of NACA Dies

Director of aeronautical research for 25 years, he planned the agency's rise to its present leadership.

Dr. George William Lewis, 66, for 25 years director of aeronautical research for the National Advisory Commission for Aeronautics, died at his summer home at Lake Wales, Fla. He was serving as research consultant to the contractor at his death, having returned from direction of NACA research in August, 1947, because of failing health. Dr. Hugh Latimer Dryden succeeded him as director at that time.

► **Unknown to Public:** Due to an illness which he never returned, Dr. Lewis' outstanding achievements in aeronautical science enjoyed national notoriety in technical circles only. He was little known to the public. However, his contribution to scientific aeronautical knowledge throughout the world in fundamental research are of historic importance.

Dr. Lewis was born in Hinton, N. Y., in 1882. He was graduated from Cornell University in 1904 with a mechanical engineering degree and received a master's degree in mechanical engineering degree in 1909 from the same institution. He held honorary degrees of Doctor of Science from New York University and Doctor of Engineering from the University of Illinois.

► **Since 1919:** Dr. Lewis joined NACA at Langley Field in 1919 as a power plant engineer and was appointed executive officer in November of that year. He was named director in 1924, a post he held until his retirement.

Under his planning, NACA grew from 47 employees to its current 6,000, from one wind tunnel to three major research laboratories and two special research stations, from an original plant worth \$300,000 to its current valuation of over \$5,000,000.

► **Achievements:** Under his aggressive development of special research equipment unique in the world, including the first variable-density, full-scale, open, free-flight and refrigerated wind tunnels. He personally directed the planning and construction of the Aircraft Flight Propulsion Research Laboratory, Cleveland, Ohio, which NACA will shortly assume the Lewis Memorial Laboratory in his honor.

Dr. Lewis was a member of the executive of judges, Daniel Guggenheim air research competition (1927-29), member board of judges, Wright medal award (1928-35), member board of award, Mather memorial award (1935-38), president, American Society of Mechanical Engineers (1938), member of Congress medal (1938), plan-



Dr. George William Lewis

etary delegate, International Technical Aviation Conference, Lima, Peru (1927), member board of directors, National Air Races of Cleveland (1934), president, Daniel Guggenheim Medal Fund Inc. (1938-39), president, Institute of the Aeronautical Sciences (1939), director, Wright Memorial Lecture, Royal Aeronautical Society (1939), member, U. S. Commission, Permanent American Aeronautics Commission (1941), member, Spirit of St. Louis gold medal (1944), elected member, National Academy of Sciences (1945), received medal of merit for outstanding civilian contribution during World War II (1946). He was a member of the National Inventors Council and numerous professional societies.

## USAF Research

Extra appropriation makes possible special development projects.

Air Force is moving into high gear on a number of special research and development projects considered necessary to implement its tactical plans. A special additional appropriation of \$18,215,000 was provided for these projects. They are in the continuing research and development program of the Air Force and include:

► **Experimental Aircraft:**—\$17,239,000 for work on range extension projects in

fighter aircraft, improved fire-control equipment for fighter planes, work on the track landing gear as applied to the Boeing B-50; \$10,000,000 for improved fire-control equipment for the Boeing XB-47, dual-engine prototype for the turbojet in the long-range Boeing XB-70; location, research on technology to cut down on the distance fuel is required for takeoff and steering gear for jet engines.

► **Guided Missiles:**—\$10,019,000 for work on supersonic rocket engines. Research emphasis on the air-to-air guided missile project and acceleration of development work on remote control guidance systems.

► **Power Plant:**—\$1,330,000 to accelerate the development of a type of turbo-prop engine that will be particularly applicable to long-range bombardment airplanes.

► **Propulsion:**—\$2,621,000 to accelerate development of turbojet and turbo-prop engines and turbojet and turbo-prop engines.

► **Avionics:**—\$3,396,000 to accelerate the development of bomb beam and bombing equipment, bombing systems, fire-control systems and closing systems that are contained in fire-control devices.

► **Photographic Equipment:**—\$695,000 for reconnaissance cameras and related equipment, mounting, illuminators and processing equipment for rapid development of aerial photographic systems.

► **Track Landing Gear:**—\$300,000 for the accelerated development of track landing gear in general and spent from specific installations.

► **Electronics:**—\$3,575,000 to accelerate the development of guidance and tracking systems, including GCA, glide path evaluation and similar remote-control electronic equipment. Of this total \$215,000 is for development work in GUPF communications systems. In addition, emphasis will be placed on navigational systems and instruments including universal beams and substituted beams. Research into electronic systems to be used against radar will be accelerated.

► **Test Equipment:**—\$6,499,000 is authorized for the purchase of improved test equipment for Wright-Patterson Air Force Base, Maxwell Air Force Base and Aberdeen, Md.

► **Geophysical Research:**—\$1,755,000 for upper air research including the study of stratospheric pollution by nuclear warheads. This research is intended to develop atmospheric forecasting because it is important to the operation, control and navigation of future missiles and the improvement of meteorological forecasting.

Unspecified projects account for the balance of the special appropriation sum.

## New Laws

President signs eight aviation measures, dies dirrivable proposal die.

Eight aviation measures speed through Congress in its closing hours have been signed by the President and are now law.

The President's pocket veto of legislation directing the Maritime Commission to draw up plans for a recently developed program of rapid light aircraft design for commercial use reportedly will not be passed to Maritime Commission selection to undertake the project.

Aviation measures signed by the President were:

► **Airline Financing:**—The two measures to facilitate airline financing of new equipment were reportedly signed by Air Transport Association. One authorizes CAA to record firm on aircraft equipment and "budget" loans as aircraft plans. This will give them legal status and open the way for purchase purchase of capital and parts. CAA is already authorized to issue loans on aircraft. ATA's Executive Vice President Robert Ranspach reported that capital and parts new account for approximately 51 percent of the cost of new fleet purchases, and that lightning purchase of the aircraft will assembly and inventory held-up as serious in acquiring new equipment.

The other measure removes liability and other financing new aircraft purchase from liability for accidents involving the aircraft. Financial resources in the past have been reluctant to finance new plane purchases because in over a dozen years the aircraft owner has been held equally liable with the operator-owner for aircraft accidents.

► **Disaster Relief:**—The legislation directs the Weather Bureau to make a comprehensive study of thunderstorm phenomena with a view to promoting an office.

► **Overseas Facilities:**—The measure gives CAA sweeping authority to purchase, construct, and operate airports and navigation facilities abroad the world and to train design engineers in their operations, with a view to promoting U. S. aviation air transport. Appropriations would have to be obtained from Congress before projects could be undertaken, however. CAA is authorized to "make, sign and reasonable changes for airport construction (including but not limited to landing fees)." The immediate result of the legislation will be to open the way for CAA to take over operation of air-

port installations built abroad during the war.

► **Domestic Airways:**—The measure, aimed at furthering the domestic air transport facilities program, authorizes CAA to acquire (among other conditions) power, if necessary, airport, and airport facilities, both on and off the federal airways. CAA, now limited to operating facilities on the airways, is blocked in its plan to liberate the country with intercontinental high frequency radio range navigation (USAF's request for radio power cost

installations was rejected by Congress).

► **Ocean, Lake, Strait—Clear channel:** authorizes the Coast Guard to establish and another means to operate and maintain some stations and Loran stations for air navigation. Coast Guard is authorized to establish Loran stations at the direction of the CAA, and maintain, but could only establish coast stations required by the national defense.

► **Air Traffic Control:**—CAA is authorized to train government and civilian personnel for air traffic control.



**BOEING SCOUT GETS A LIFT**  
Army Ground Force's L-114 heavy plane can be loaded down for airlift and loaded aboard a Boeing C-97 Stratofreighter. Lanes photo shows parts of plane being loaded upon shifting stage inside the upper cargo door of the C-97.





## ENGINEERING & PRODUCTION

### Beech Sales

Company averages about \$2 million a month for first three quarters.

Beech Aircraft Corp. has been averaging about \$2 million worth of sales a month for the first nine months of its 1948 fiscal year, with total sales of \$18 million for the period.

A breakdown of these sales indicates that approximately 34 percent of the dollar value was contributed by conventional type planes and spare parts, including foreign sales.

Conventional sales include Beechcraft's new Model 18 all-metal four-engine Beechcraft for executive and corporate use, including some sales to foreign lines, and new Beechcraft Bonanza four-place all-metal executive aircraft. Spare parts accounts for about 15 percent of conventional sales.

► **Military**—Military contracts accounted for about 16 percent of the sales volume, and accounted for the most part of recent contracts for the U. S. government, and spare parts.

No accurate report is available as to the number of Beechcrafts in use today. This is due to the delivery of many

such planes to foreign countries in connection with foreign aid programs and as a result of surplus sales after the war.

► **Spare Parts Department**—Beech management, however, estimates that there are approximately 6500 Beechcrafts in current use, either in the hands of United States and foreign governments or commercial users. This quantity of aircraft requires a large volume of spare parts manufactured on a continuing basis in order to insure proper maintenance, and indicates the importance of the spare parts contribution to Beech sales volume.

Of the total volume of sales for the first nine months of the present fiscal year, more than 15 percent was due to export deliveries. Considering conventional sales alone, including complete aircraft and spare parts, export sales contribute the annually high percentage of 38.4 percent of the total conventional bookings.

Conventional export orders are reported to be at an "all-time high level" despite the current difficulty of obtaining allocations of dollar funds from foreign countries. No export order is completed until the sales purchase plan is cleared by an irrevocable letter of credit.

► **Team Quaid**—The management expects that considerable interest is being shown

### C-W to Call Stock?

Being market prices for C-W Wright's "A" stock have given impetus to reports that the company soon may call for redemption at around \$75 per share.

Later last year the company invited tenders for 500,000 shares of Class "A" stock at \$18.50 a share. Only 240,951 shares were offered and retired at a total cost of \$4,205,000.

With the company winning its management fight against a group of dissident stockholders and holding about 500,000 shares in deferred surplus working capital, it is believed further reductions in the outstanding capitalization will be attempted.

by domestic and foreign airlines along with the U. S. military services in the new 35-passenger Twin-Quaid Beechcraft transport which is being tested for Civil Aeronautics Administration certification tests. Routine company flight testing is reported to be proceeding smoothly.

Designed for operation from small fields, with a projected maximum operational cost per seat mile, this new aircraft is expected by the Beech management to find wide market distribution. With this plane added to its list, the company will have its sales still further diversified.



WORK FORCE GROWS AT BORING WHILE STRIKE GOES ON

Although the Associated Mechanical Union claims otherwise, the three-month-old strike at Boeing Aircraft Co.'s Seattle plant appears to be losing its effectiveness as work resumes on Stockmayer (left), and the 4 p.m. shift change (right) once more poses a small army of workers from

the plant. With one shift now more than 65 percent manned, the company plans to start a second shift today. Employment last week totaled 3857, including 2217 in hourly status. In one recent three and one-half day period, according to personnel manager Les Hanson, 1143 hourly workers



were laid. Company says it is now within about 1600 of its goal of 10,000 hourly workers. This is 6000 hourly workers less than were needed before the strike, so the company states, to stopgap soft contracting that already has not been needed recently by 1146.

CAA PROPOSED IT!

NAS ADOPTED IT!

AOPA ENDORSED IT!

PAC HAS IT!

a high-strength quick-release safety belt

CAA PROPOSED IT!

NAS ADOPTED IT!..

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PAC HAS IT! . . . . .

**NEW SAFETY BELT REQUIREMENTS**

- 565 gross weight
- quick-release mechanism opens and is maximum pull of 15 lbs
- 3-inch minimum width
- tamperproof and rubber-cordless

In Civil Air Regulation draft release 47.9, the CAA proposed more stringent requirements for safety belts, in accordance with findings of the Cockpit Injury Project of the National Research Council.

In NAS 802, the CAA proposal was adopted as a National Aircraft Standards Committee specification.

The Aircraft Owners and Pilots Association, in its official organ, advocated compliance with the new requirements.

The new Pacific Airmotive safety belt fully meets all requirements of the new safety code. We believe it is the only belt commercially available today that can do so.

**This Attractive PAC Safety Belt Available for All Private and Commercial Aircraft**

The Pacific Airmotive belt has a highly finished, attractive buckle, and is supplied with wear-resistant webbing in any one of six colors: Wine, Evergreen, Beige, Autumn Brown, Redgrip Grey, Woodsmoke Blue.

Your nearest PAC major base will gladly give you further information. Call or write today.

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# Aeromatic® out-performs them all in split-second emergencies...



**POWER LINES** on his final approach at the last annual The pilot, Mr. Edward Buckner, president of Franklin Aeromarine Propeller Association, was really apologetic as he had a full load, no wind and an air speed of only 50 MPH! Here's his own story of what happened...

**TO INCREASE STABILITY:** Aeromatically with the engine at full throttle, Aeromatic Propeller Association flew plane. One plane at ground level with full throttle (view).

**TO INCREASE RATE OF CLIMB:** Aeromatically with the engine at full throttle, Aeromatic Propeller Association flew plane. One plane at ground level with full throttle (view).

**TO INCREASE CLIMB RATE AND STABILITY:** Aeromatically with the engine at full throttle, Aeromatic Propeller Association flew plane. One plane at ground level with full throttle (view).

**TO INCREASE CLIMB RATE AND STABILITY:** Aeromatically with the engine at full throttle, Aeromatic Propeller Association flew plane. One plane at ground level with full throttle (view).

**WHILE THE ENGINE IS RUNNING:** Aeromatically with the engine at full throttle, Aeromatic Propeller Association flew plane. One plane at ground level with full throttle (view).

WHILE fully loaded and giving a demonstration, I was coming in to land on an unfamiliar runway. I did not notice the power lines until they were directly in front of me. My air speed was only 50 MPH... I applied full throttle at once, attempting to clear the lines, or force my way through them. Our landing gear was caught momentarily on the wires... but we ended up in a normal landing... as though nothing had happened. No one was hurt. The damage was negligible. We all agreed that a serious crash had been averted due to the rugged stability and safety factors of the Aeromatic Gyroplane and the fact that the Aeromatic Propeller Association was not just a club and a hobby, but a business. I contacted my demonstration with the same passengers and, as a result, obtained five orders for planes, all to be supplied with Aeromatic Propellers.

AEROMATIC is now available for these planes... as being

approved for other engines and models.

STROVER  
DUPT 120  
GERMAN YETTER

PIPER SUPER CRUISER  
BELLanca CRUISER  
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GEORGE  
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FAIRCHILD 24

also available for Aeromatic engine models

**Aeromatic**

The propeller with a brain for your personal plane

All Aeromatic Aeromatic Propellers—standard order. Order of Aeromatic Propeller Corp.

On V-J Day, however, the North American model was cancelled and the Lockheed order cut back to 917 planes. This order has since been increased by 194 F-80C, 150 FV-100 two-seater trainers, and 30 T-34 trainer versions for the Navy. These and prototype models total 1335 Shooting Star types.

► **Air Intake Factors:** The F-80A proved the problem of air intake during landing control. In the original plan, as run air was slowed inside the air intake, the boundary layer (adjacent to the fuselage) thickened, resulting in stalling of the flow and its own turbine. A solution of duct "bleeding," where flow to the engine plenum chamber, flow fluctuations over the wing and resultant "buffing" and poor engine performance.

These complications were solved by the introduction of a boundary layer bleed duct, adjacent to the fuselage, which carries the low energy air away from the air intake and exhausts it from below above and below the wing air inlet.

As a result, 70 percent recovery of the ducts was increased to 60 percent of available available compressor pressure. Although this was not exceptionally high value, at high speed, duct impedance was in the recovery at low flow rates, making air starts easier. The modified duct resulted in the modification of double the speed of the original installation.

The double-duct injector of the 1-40 engine takes in air on both front and aft inlets. This system requires a plenum chamber installation in the forward part of the engine in which the intake components continue as under pressure. Air entering the plenum chamber is drawn down toward the engine and exits through a 100-hp. fan to exit, resulting in large losses.

It is this installation that holds down efficiency of the P-80 and indicates that the vent-fan installation is a major problem.

► **Turbine Details:** The P-80 had the same turbine problems that have plagued subsequent jet craft (Aviation Week, May 26, 1948).

Although the P-80 engine is not as sensitive to variations in intake area as is the J-35 (TC-136) (about 100 lb thrust loss per 1-in. variation in the J-35 compared to 115 lb loss in J-35).

Lockheed's tests showed that decreasing the intake area of the P-80 from 11 to 14 in. increased the thrust 400 lb, increased turbine temperature 150 F and provided subsequent improvements in engine performance.

Problem of air leakage deflection transmitting fueling loads to the engine turbine was encountered in a strike test in which an 800-lb. load was imposed on the horizontal tail. This load was resisted to unstable buffeting. Al-

though a fuselage deflection of two inches was noted, no damage to the engine or turbine resulted.

Low internal pressure existed inside a combustion chamber pack failure. Collapse of the ducts on the XP-80 engine resulted in installation of two spaced-out ducts to stop the leakage of the energy which permit outside air to enter the plenum chamber when the internal pressure falls below a given value.

These ducts have proved completely satisfactory and have increased to tenfold the fuel flow.

A ducting system differential can occur with the turbine, particularly in event of an engine failure and failure, which would introduce high pressure air into the intake of the turbine, through which low pressure air is flowing. Such tests indicated that a differential of seven inches of mercury could exist under the conditions and the turbine has been designed to cope with this.

► **Emergency Fuel-Feed System:** Consists of both wing and fuselage tanks equipped with an automatically installed fuselage system in which the wing tanks pump fuel into the fuselage tank. This system can be controlled by manual control arrangement. Instrument panel lights indicate empty tanks.

Wing fuel tank tanks are pressurized by a bleed line from the engine compressor.

The basic fuel system contains an emergency system which operates automatically when the main system pressure falls below a given value.

The compressor arrangement consists of an electrically-driven fuel pump in a line connected between the tank and the turbine. This permits fuel to bypass the engine-driven pump, the gas turbine and the burner, and enter one of which may malfunction. Numerous 70-hp. have already been used by the use of this emergency fuel system and it has been proven a standard requirement for jet aircraft.

► **Water Injection Quench:** The P-80 was the first jet craft to experiment with water injection, and thrust increase as high as 50 percent of thrust has been attained with water flow rate of 25 gpm.

Water injection increased engine pressure ratio about 8 percent, turbine temperature about 5 percent, and reduced the temperature ratio through the compressor by two-thirds.

These effects reduced the intake loss to about a 50-lb. increase in 70 percent of the thrust required without water injection.

Although these gains are considerable, water injection introduced a serious of practical problems in the P-80 which have not yet been satisfactorily overcome.

In addition to wing tip tanks, the water injection system and light instruments are also operated by pressure bleed from the engine compressor. When water injection rate the engine, the engine, instruments, and tip tanks are water-governed.

To eliminate this condition, water is pumped in and on the P-80 only when the engine pressure is high enough and tip tanks are released, separately by shutting off the air bleed from the compressor. Design with on the conditions a being passed.

► **Tip Tank Study:** Location of the tip tanks on wing tip tanks on the P-80—originally no distinctive feature—was added after extensive wind tunnel tests at eight different installations, revealing the P-80's high speed performance. The shape of the tip tanks, having under the wing and a series of aerodynamic post boxes.

Fuel installation, at the extreme tip, was simply because the engine was left in this position, actually giving 12 percent increase in thrust as compared to a 27 percent increase for the P-80 type and a 30 percent increase for the tip type.

Further investigations revealed numerous other advantages of the extreme tip installation.

The tank provides an air effect (specific volume ratio flow) increasing the effective speed ratio of the wing from its geometric value of 5.5 to an effective value of 9.0.

This actually increases the drag of the wing. In tests from 40,000 ft., the P-80's drag was reduced by the tanks and 90 in. with tanks installed.

The tip location has a maximum adverse effect on wing critical Mach number, the plane having been shown to Mach 0.75 and 0.80. The critical Mach number of the wing is actually increased through the dead weight effect of the fuel.

Adverse effects were minimized, however, when the tanks were located at the rear of the fuselage, reducing the adverse effect of the tanks.

Two new tanks can be fitted, the standard 100-gal. type and special 150-gal. type, weighing less than 100 lb. and the present 4-lb., 11-lb., 25-lb., and 30-lb. tanks.

With East International tested by Col. W. H. Conner, an average speed of 400 mph was achieved with 1500 lb. complete with tanks.

► **Cable Tension:** One of the major problems of high-speed aircraft tested was revealed on the P-80 but is common to all types of the same high performance.

The system system is fitted with a conventional hydraulic booster of the type used on the P-80 and provides a ratio of 15:1 between control movement and pilot effort. With this ratio



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It has been a long time between gears... our first ones in 1902, and the gears\* scheduled in our plans today. Between these gears lie the years of experience which are needed to produce the finest in precision gears.

\*Shown here in an arbitrary planetary gear on which tooth combinations must be maintained, and whose slight misalignment in assembling and hardening would be disastrous.

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a rate-of-roll of 150 deg/sec is obtained at intermediate altitudes at an indicated speed of 100 mph. Boost ratios as high as 25:1 have been tested and produced pleasant rates of roll. However, these are not unusual occurrences.

One problem created by the boost action is the combination of the high rate-of-roll at high altitudes, resulting in overcontrol at 30,000 ft. and above. An Air Force pilot believes that some method of compensating the boost action for altitude would be highly desirable since pilot effectiveness is decreased in combat involving wide variations in altitude, if the pilot has to remember the variation in altitude effectiveness with altitude.

Altitude cables are 2 in. dia. Metal-clad, but in spite of very high payloading and provisions taken to reduce system deflection, only about 50 percent altitude displacement is available at high speeds. This problem is attributed to the occurrence of "boom" on early models of the P-50. This condition is created by flow line fasteners (often covered by shock wire) becoming forward of the altimeter over the upper and lower surface of the altimeter, in a manner to cause a high frequency vibration with an amplitude of about 1 in. at Mach 0.80 and a violent oscillation through large amplitudes at speeds higher than this.

After extensive travel tests at the NACA-Army Aeronautical Laboratory, Moffett Field, Calif., it was revealed that standard control cable tension was the only expedient answer to the problem. Latched standard cable tension is 150 lb., an abnormally high value, at an level to mean that a tension of more than 50 lb. is available at 30,000 ft.

**■ Altitude Equipment**—Control equipment aboard the P-50 affords a wide range of altitudes. Arrangement includes six direct reading gauges located on the nose, and special cluster fittings accommodating 10 sockets. Wing tip tank fittings can carry two 10000 ft. tanks.

A photographic version, the PP-40, features a special nose containing clear-glass panels and provisions for a variety of cameras including the standard reconnaissance type.

Two 1000 ft. direct JATO units may be fitted to the P-50 fuselage to reduce takeoff up to 50 percent.

Radio-controlled three P-50s have been successfully tested and various phases of radio control developed by Dick Aircraft, Sperry and the Air Force are now undergoing study.

Parachute decelerator, pilot ejection seat, cabin refrigeration equipment, and alcohol-water injection are standard equipment on current models.

## Planning to buy Snow Removal Equipment?

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**1 Get the facts on Walter Snow Fighters** before placing any order. Learn the many exclusive features which make them the fastest, most thorough snow removal equipment—capable of staying ahead of any storm and keeping runways open under all conditions.

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**3 PLACE YOUR ORDER NOW!** The peak demand for Walter Snow Fighters is just ahead. Let us schedule production and assure delivery of your units before snow-time. It takes time to build carefully-engineered Walter Snow Fighters, hydraulic controls, bodies and gears. Act today.

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## THE PACKET

### Carries Its Own "FLYING RUNWAY"

Engineering ingenuity has again added new usefulness to the Army's versatile flying boxcar, the Fairchild Packet.

The Packet, standard troop and cargo carrier for our air-transportable Army, was originally designed to operate in and out of short, unimproved airstrips. Recently refined since its inception, it can now accommodate some of the largest weapons, vehicles and equipment used by the standard infantry division.

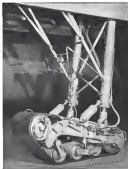
Today, The Packet has even wider applications in modern military tactics. Engineers of the Fairchild Aircraft Division developed a truck tread landing gear that looks and acts like the track of a tank or tractor.

The new gear spreads the weight of the landing aircraft, reducing the "footprint" pressure to one-third that of the standard wheel gear. It reduces the need for surfaced runways. Thus equipped, a fleet of Packets can deliver a combat-ready force anywhere on reasonably level terrain.

Fairchild engineers, with their experience and ingenuity, have again provided a new basic ability in the fast developing techniques of modern military strategy.

**Fairchild Aircraft**

Division of Fairchild Engine and Airplane Corporation, Rye, New York



## NEPA Now Engineering Problem

Chief engineer of Nuclear Energy for Propulsion of Aircraft project cites high performance and long range.

Development of atomic power-for aircraft as well as other applications—a new predominantly an engineering problem.

Most is probably known about minimum fusion than about basic requirements of combustion or supersonic aerodynamics.

These questions were expanded recently by Andrew Kolbitsky, chief engineer of NEPA (Nuclear Energy for the Propulsion of Aircraft) Div., Fairchild Engine and Airplane Corp., in a paper presented sponsored by the Society of Automotive Engineers, in New York City.

► **Potential Netel-Holding** that nuclear energy-powered craft are available for long non-stop to any spot on the earth and ocean, Kolbitsky said that the main advantage of atomic propulsion for aircraft is the possibility of combining high performance and long range, since fuel supply would remove nearly constant.

In present-day craft, though high speed, large payload, or long range can be realized separately, a combination of these three features is not attainable. ► **Shielding Considerations**—Craft design, says Kolbitsky, would be not in the reactor containing in function but in the "tail" products of fusion directly formed at the time of the crash.

Problems of protection against radiation damage is reducible into two considerations—"shielding" and "cooling." Shielding is required to stop radiation originating within the reactor. Cooling of the uranium blocks is necessary to prevent escape of the violently radioactive fission fragments into the reactor cooling system and to the outside, beyond the protection of the reactor shield.

First models of aircraft employing atomic-energy plants will probably require extremely heavy shielding materials.

Shielding now under study is stated to be strong lines of "plywood" construction—absorbing the gamma of the neutrinos to end in apparatus of radioactive transmutations.

► **Plus's Potable Features**—The very high speed atomic-powered plane is also, naturally, as being about as large as the aircraft B-36.

Its landing weight would be equal to takeoff weight, since practically no fuel would be used up in flight.

Crew partitions would be located as far as possible from the power plant



Andrew Kolbitsky

and this would permit more weight saving in the shielding.

Structure of the craft will differ somewhat from the conventional in that the "tail" fuel would be concentrated at one spot—in the reactor at the craft's C.G., rather than widely distributed.

This feature is similar to that in our then weight, high-speed craft now under development, which do not utilize wing tanks.

Various basic types of power plants could be adapted to use atomic energy for aircraft propulsion.

► **Thurston**—One type of thermal power plant could be the closed cycle turbine—steam or mercury. Steam would be generated by heat in the reactor, which would serve to replace the boiler in a conventional arrangement.

The turbines would expand through the turbine, which drives a propeller, and then condensed in an air-cooled condenser. The supply would be forced back into the turbine-chamber by a fuel pump. (Airplane prop., with such an arrangement, evidently would be feasible.)

► **Thurston**—In a turbojet power plant, the combustion chamber would be replaced by a nuclear reactor. Air would be passed through the reactor, where it would be heated by convection instead of by combustion of fuel. It would then expand partially in the turbine, sufficiently to drive the compressor, and finally in the jet nozzle, where it would create the propulsive thrust.

► **Thurston**—In the reactor, air entering the diffuser and compressed by the forward speed of the plane, would pass through the nuclear reactor, be heated to high temperature, finally emerging through the exhaust nozzle where it would expand and acquire a high velocity, according the propulsive thrust.

The aircraft would be very effective at extreme speeds high in the upper atmosphere. Air temperatures required are very high—considerably higher than those required in a turbojet.

The aircraft would be very sensitive to pressure drops caused by the internal flow resistance of the reactor or combustion chamber. Good heat transfer conditions must, however, be paid for by appreciable pressure drops. Hence, the aircraft application does not appear to be a simple problem.

► **Radiation**—In a nuclear application, the propellant, for example, liquid hydrogen, would be pumped through the reactor where it would be superheated and heated to a high temperature. Its type would be at high velocity through the exhaust nozzle.

Nuclear energy offers a distinct advantage as a rocket in that the specific impulse of a rocket propellant, the pounds of thrust that can be obtained from each pound of propellant used per second, is proportional to the square root of the absolute propellant temperature divided by the molecular weight of the propellant. Thus, highest possible temperature and lowest possible molecular weight are desirable.

In a chemical rocket, the high temperature is obtained merely by combustion of a fuel and an oxidizer, whose products of combustion are then used in the propellant. Since the propellant is the result of the combustion of at least two gases, its molecular weight will be fairly high. For example, if hydrogen and oxygen are used, the resultant propellant is water vapor, with a molecular weight of 18.

Whereas, if liquid oxygen is used to provide the high temperature, there is no need for combustion, and very light propellant results, as in liquid gases, with a molecular weight of 2, can be used.

## New Board Members

Within a month after General Motors' withdrawal from North American, the aircraft company retained a new-member directorate with election to the board of three new men. They were: William C. McInnes, electric company president; Allen G. Busch, steel company president; and Charles A. Rade, banker.



Small wing (left) at end of nose ski gear on C-47 holds ski in proper position during flight and helps lift the weight of the axle.



When gear is retracted, nose gear sits on Packer in air tight. Ski may be raised or lowered in relation to this wheel.

## Services Investigate Utility of Ski Gear

**Air Force and Navy tests conducted for evaluation of added undercarriage device to improve versatility.**

Air Force and Navy tests for proving ski gear operation have been conducted with installations on various types of aircraft.

Navy tests were made with the Beech B40 and Douglas R4D (C-47). Skis were tested first in Canada, then in Antarctic operations.

Air Force tests—scheduled to have been started this spring in Alaska—have postponed ski installations on the Fairchild C-41.

Air Force original ski gear (not an C-47) is reported to have tests off in

flight. As a result, a symmetrical axle was added at rear of ski to maintain proper pitch during climb after takeoff and in landing approach.

Flow of air through a series of holes in the gear attaching the axle to the ski allows proper angle of attack.

Airfield usage and on the Air Force installation differs from that on the Navy ski gear.

Weight of the R4D ski gear is 1100 lb. Montreal is 7581 lb. In fact, wheels protrude about 1 in. under the ski installation.

Navy used wheels for easier takeoff in Antarctica, then made tests—loading with ski. Wheels were retracted and operations were conducted on ski about 10 days.

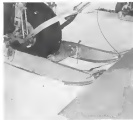
Operations of R4Ds on a 35,000 lb. gross, mid takeoff runs with ski were over as with wheels only. Jato was used for special overlanded takeoffs.

Navy pilots report ski operation to be as favorable as with wheels. They pointed out without wheels installed on the gear, although operations could be carried out with both units installed, if necessary.

The ski gear is made for both services by Federal Aircraft Works, Minneapolis, Minn.



How ski gear installation, left, is shown on Navy R4D. Closeup, right, shows ski portion of the gear with the wheel installed.



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# CHEVROLET TRUCKS

AVIATION WEEK, July 19, 1948

81





## Makers of Aviation History

THROUGHOUT TWO WORLD WARS and the years of peace between, the foresight of Vickers-Armstrongs' designers and the skill of their engineers have been responsible for many of the important developments in aviation. Today the high standard of design and craftsmanship established by such aircraft as the 'Vimy'—the first aircraft to fly the Atlantic—the 'Wellington' bomber and the famous 'Spitfire' fighter is maintained by new combat and commercial aircraft, including:—



THE 'VIMY'

Britain's first post-war aircraft... all the latest most advanced twin-engine passenger aircraft. Used for 14 British air line, subsequently private mail passenger for air services and stretch flying.



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THE 'VC10'

This machine has been the great success of the 'VC10', providing the basis of interest with a high performance two-engine motor, powered by two engines developed and built thousands of hours operational flying all over the world.

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G.A.S.

## NEW AVIATION PRODUCTS



### Lightweight Battery

New 1 lb. transport type aircraft battery, Babat TBA, is marketed by Reading Batteries, Inc., Reading, Pa. Unit weighs 75 lb. wet, has 48-amp-hr rating, and measures 14 x 7 x 10 in. It is available wet and charged for immediate service, or moist and recharged for export or storage.



### Snap-On Flexible Hose

Flexible tubing with interchangeable snap-on couplings is available from Rosettes Tubing Co., Pickard Building, Phila. 2, Pa. Degree of interchangeability varies with type and size of coupling. Types 1, 2 and 3 are available in 1/2, 3/4, 1 and 1 1/2 in. diameters. Each kit 1, 2, 3 and 4 includes Coupling in that slightly low size of attachment can be attached to fit nipples ranging from 1 to 2 in.

### Seals Plane's Surface

Positive coating, AcGlo, represented in sealing aircraft against effects of weather, insect damage, acids and salt air, is marketed by Regal Air Corp., 118 West 39 St., N.Y.C. Coating is stated to dry out in 5-8 hr and weigh 1 lb. Flowing flexible transparent film setting up to 12 mils thick features insulating resistance to chipping, peeling, bubbling, cracking, wrinkling, or descaling. Claimed as that finish does not damage surface, and may be removed with solvent.

### Suppresses Humidity

Used to treat radio condensers to decrease moisture resistance or performance, is new humidity suppressant made by Everset Inc., Kensington Div., Vercelle, Conn. Atmosphere conditions ranging from 20-95 percent, + 35 to + 175 deg F, (dry bulb) are maintained automatically in cabinet-stored items 10 to 35 cu. ft. Models operate on 110v, 60c, single phase current. Wet bulb control and humidity sensor under load are maintained by float valves. Air sensors pass valve circulation within standard test space.



### Small Motors

Facilitated by d.c. motor designed for trim tab actuation, stall-winding system, fuel valve actuation, fuel-injection switching and other applications, is manufactured by Red Bank Div., Bendix Aviation Corp., Red Bank, N. J. Units are available in various voltage ratings, shock, overspeeding, or reversible rotation, and with piston, vane or gear shafts. Motor diameter is 18 in., length (over shaft) 26 in., weight 12 lb.



### Bonding Clamp

Adaptable for service use in oil-bonding, contact clamp, made by Thomas Associates, 4611 Avenue 24, Los Angeles, Calif., with rubber quickly compounded to conduct electricity. Units are available in sizes from 1/4 to 4 in. dia., in inch increments.



### Induction Motors

For aircraft plant applications where adjustable speed or high starting torque with low starting current is required, wound-rotor induction motor is offered by Westinghouse Electric Corp., 365 Fourth Ave., Box 1617, Pittsburgh, Pa. 62 open dry-proof construction, unit ratings are from 1-15 hp. Motors are obtainable for 60, 90, and 210, two- and three-phase 208, 230, 440, and 590-1755, 1160, 670, 690, 580 rpm. 100, 140, 165, 175, 580, 485 for 90, and 145, 175, 485, for 210.



### For RPM Measurements

Small, lightweight tachometer heads, Type 34, are available from Metrum Instrument Co., 432 Lincoln St., Denver 5, Colo., for use with standard SAE and AN aircraft tachometer take-offs. Heads can be used with company's tachometers to give full scale readings as low as 200 rpm or up to 10,000 rpm. Units weigh 10 oz. are 2 1/2 in. dia., and 4 1/2 in. long. Operation is no contact principle, and shaft is mounted in permanently lubricated bearing. Torque is 1/20 oz.-in. for high speed types and 1/40 oz.-in. for low speed.



Operator's console.



Daylight display.

## Daytime Radar Reading Eased

War-born device used at Australian airport to relay plane positions from main indicator to display screen.

MELBOURNE—Radar information is presented by the traffic control office at Mascot Airport, Sydney, by a novel daylight display device which permits him to carry on his functions while casually referring to the radar information when it is required.

The device was developed during the war by the Radioplane Laboratory of the Council for Scientific and Industrial Research. It was one of the hundreds of developments under direction of Dr. E. G. Bowen, Chief of the C.S.I.R. Radioplane Division, which contributed to Allied supremacy in radar technology during the war.

These features:—The complete installation consists of three sections:

(1) The radar, which is a console set in the airfield, with the aerial control by a propeller antenna.

(2) The lower radar equipment with the indicators, and

(3) The uplighting equipment.

The complete equipment is adjusted from the airport control building.

The main indicator is mounted in the console shown at left. From here the operator transmits the reading of the uplighting position to the daylight display in the flight control office, shown in the second photograph.

► **AR CRAFT TUBING**—The operator locates the tracks of all aircraft within range as the Plane Position Indicator (P.P.I.) tube, incorporated in a normally dark screen in the console. Aircraft positions

are transmitted from the radar set in the field. An illuminated stylus is used to trace the readings on the disk screen. Two wires attached to the tip of the stylus (faintly visible near the middle finger of the operator) wrap around pulleys on the shafts of two intersecting wheels which drive two recording wheels in the daylight display.

From the screen two thin wires connect with a writing point. This printer system produces an enlarged version of the movements across the cathode ray tube by moving the writing point across the back of a paper screen in the daylight display.

The screen is saturated with a solution of methyl potassium iodide and sodium carbonate and rolled onto the back of the brilliantly illuminated glass window in the daylight reading rack. The reader can be seen clearly against the bright fluorescence, which is produced by daylight-type fluorescent tubes.

► **Repeating**—On the main indicator, the operator plans the course of an aircraft by moving the spot of light carried from the stylus onto the track seen on the radar screen, passes a track and moves the light along the track to the location of the aircraft.

Passing the bottom edge of the stylus D.C. to the writing point of the display screen. Electricality of the potassium iodide results in an accumulation of iodine at the writing point and is pro-

duced a purple-black collection of the streak. Operations of the bottom also duplicate the spot of light cast by the stylus, in that the plunger of the cathode ray tube is moved to give a bright mark to correspond to the mark on the screen of the display.

Each aircraft is plotted in turn. Marks fade within five minutes, the time in which a second in the control area.

## 2000 Passengers a Day At Venezuelan Airport

CARACAS — Climaxing a steady growth since the war, Maricao-Vieja crash's busiest airport—has reached a 2000-passengers-a-day level. Maricao is a one-runway airport serving both La Guayana, principal airport, and Caracas, capital of Venezuela some 20 miles inland.

Some 20 domestic operations use the field. International lines such as LAV (Latin American), Venezuelan, govern-ment-owned, S.A., S.M. The American and TACA carry passengers east and west, and north to Caribbean and U.S. ports.

Mail and cargo shipments also have shown a steady increase, currently averaging 176,000 lb. daily. Fresh loads are among the heaviest export items.

► **150 Movements a Day**—Average daily arrivals and departures now approximate 150. International lines coordinate their operations to daylight hours because of lack of adequate night flying equipment at the port. Meanwhile the Ministry of Public Works is pushing construction on La Guayana airport, some 15 minutes from Caracas, to make it capable of handling long-range equipment. The government bought the land for about \$1,000,000. Drainage and leveling now under way—will cost \$2,000,000 more. The work is scheduled to be completed by November of this year.

## Brazil and Argentina Reach Aviation Accord

RIO DE JANEIRO—Brazil and Argentina have signed a commercial aviation agreement whereby each authorities set no more than six slots either to fly into or across its territory.

The second formalities which had been in effect for some time. Brazil's "Taurus" is flying regularly to Buenos Aires and Argentina's "FAVAT" is operating through Brazil to Kampoe.

Under the agreement, other lines may be approved, but in no case can Argentine company carry traffic purely inside Brazil, and vice versa.

# OSTUCO AIRCRAFT TUBING

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**O**STUCO aircraft engine tubing, aircraft mechanical tubing and non-corded bright fin-

ished airframe tubing—used for fuselage and structural parts—are all produced to meet Army, Navy and AMS specifications. OSTUCO Aircraft Tubing, proved in service, is available to you, together with the knowledge and experience that marks correct engineering and craftsmanship.

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## Boeing B-50

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## FINANCIAL

### Airline Equity Market Analyzed

Confused outlook contributes to adverse psychology; wide spread noted in carriers' stock performance.

In the face of general rising market prices, quotations for airline equities continue at depressed levels. Since Jan. 1947, while a recognized index of 85 stocks rose more than 6 percent, the air transport group declined 11.6 percent.

This is mostly a reflection of the line items in which the fortunes of the airlines are held by investment groups at the present time. The general investment attitude appears to be that other industries have clearly defined objectives assuring a sustained high rate of profitable activity so why invest in airlines where so much uncertainty prevails. This is the market psychology, for example, which has propelled oil and railroad shares into new high ground while airline stocks have remained in the doldrums despite indications of improving conditions for a number of carriers.

The accompanying table reveals the market performance of all listed airline common stocks. Along with the all-time highs recorded in late 1945 or early 1946, the 1946 surge thus far and the percentage decline from peak levels are shown.

► **Expectancy**—Merely because a company's shares sold at 50, there is no basis for expecting the attainment of that market level from the present price of 2.

Yet this was the reckless approach followed by many speculators and investors who made commitments to airline securities at various stages of the broad decline during the past two years. For instance, when Northwest sold around 30, a number of investors considered the share attractive as they were all sure that 50 percent from their high. However, no equal whatsoever was recorded the basic factors thus reforming the industry and Northwest.

As a result, despite this seemingly attractive position made at a 50 percent "discount" from the peak price, this proved to be an expensive commitment in view of subsequent market action taking the price of Northwest down to around 12, severing to recent levels of about 14. In other words, the Northwest purchaser at 30 has suffered a paper loss of more than half of his original investment.

► **Fixed Commitment**—Commitments in

the air transport industry during the past two years on this market "bench" have been fully widespread. One of the major attractions remains in that many have lost but so badly that they are very firm in retaining investments in the industry or encouraging others to purchase airline equities.

The market relative decline of 47 percent was posted by Eastern Airlines. The sustained earning power reported by this company has given it the closest thing of investment character that exists in the industry has attained.

The steepest decline belongs to the parent equity of Northwest at some 90 percent from its peak. Considerable market attraction for Northwest developed as a result of the Alfa Corp. interest. Following the leader in this market was Eastern, At the Alfa Corp. stage was weakness in placing Northwest on a possible listing. When the holding company finally writes him to further investment, it will do so at a substantial loss.

An earnings return to the airline group and have hopes of being realized, as well the market atmosphere surrounding airline shares improve. Fortunately, however, the market discounts events long before their arrival.

usually listed as the New York Curb Exchange, having previously been traded "over-the-counter." Trading accounts for Chicago & Southern are very limited in view of the two classes of securities. Our data represents the actual shares and the other the strong trust certificates. The voting trust arrangement is a throwback from the early periods of company financing and is rarely found in American industry today. Any equity financing that may be undertaken in the future by C&S will be completed by the purchase of these voting trust certificates.

It is interesting to observe that in the market ranges thus far this year, American, United, National and Western have moved very much together. ► **Below Book Value**—Probably industry efforts to secure appreciation for active shares in does the air transport group. At one time it would have been possible to have sold Chicago & Southern and purchased Western with a few points to spare. Such a trade would have been almost three times as profitable than by securities invested in C&S.

The same security pattern will prevail in the future as it is too much to expect that in one market recovery, airline shares will attract the same sale followed in their descent. Management qualities have been demonstrated, operating conditions have changed, air route structures exist and a host of other elements never assuming static, will influence the course of market prices for the individual stocks.

An earnings return to the airline group and have hopes of being realized, as well the market atmosphere surrounding airline shares improve. Fortunately, however, the market discounts events long before their arrival.

—Selig Abelson

#### MARKET RANGE

##### Listed Airline Common Stocks

	1947-48 High	1946 Range High Low	July 2, '48 Last	% Decline From 1946 High
American	39	16 71	30	54%
Boeing	27	164 71	34	73
Chicago & Southern*	314	71 94	84	84
Colonial	47	41 64	79	63
Eastern	35	181 164	177	47
National	41	184 71	40	80
Northwest	21	50 23	23	80
Northwest	171	614 171	174	78
Pan American	70	314 54	104	64
PCA (Capital)	49	81 91	41	56
TWA	74	124 32	134	62
United	62	194 145	15	76
Western	60	204 60	54	78

\* Voting trust certificates.

## SALES & SERVICE



FLYING PANEL of IAS panel plane team at Detroit. In left, George Tenny, associate professor of aeronautical engineering, Wayne University; George Lansing, Lawrence M. Fitch, vice chair-

man IAS Detroit section, Arthur H. Telly, Jr., Harvard University; Fred E. Wood, Texas A & M College; Wolfgang Langewiesche, Kellogg research pilot. Tenny served as moderator.

## Experts Call for Improved Planes

Panel of engineers blueprints plane of future at IAS "flying forums" held in Detroit, Wichita and Dayton.

By Alexander McHenry

A blueprint for a better potential aircraft of the future emerged from expounding discussions stimulated by the recent "Meeting on Wings" of the Institute of Aeronautical Sciences. The unique meeting, held on three successive nights at Detroit, Wichita and Dayton, brought a panel of experts to each of these cities for discussion of personal plane design requirements, followed by a session at which other engineers contributed their ideas.

Following characterization and design features for tomorrow's plane are suggested:

- Quotient as to propeller, engine efficiency and exhaust
- Short landing, of 100 to 200 ft.
- Safe landing, of 100 to 150 ft.
- Gustily improved spiral stability for extra maneuvering flight
- Controlling air flow over wings, by boundary layer control of some form.
- Maneuverability
- Crosswind landing gear
- Greater maneuverability
- Greater maneuverability which would combine the advantages of both helicopters and fixed-wing aircraft.
- Great shrinking tips
- Elimination of wing board by fuel

units," Weeks predicted.

He cited the Curtiss Tanager, the German Fieseler Storch and the Ryan Diamond as three types of airplanes that would operate out of small fields, but pointed out that they were "relatively complex and expensive for the load they would carry."

His analysis showed a payload 500 lbs. and a lift coefficient for takeoff of 1.5.

He called for a serious study of application of high lift devices on personal aircraft and an investigation of the amount of lift coefficient needed for a small plane. He pointed out that a high lift coefficient was required so little thrust was enough upon and enough power for weight to be carried.

• **Simpler Flyer-Week** also called for aircraft toward simplifying operations required of the pilot in the new high performance personal planes, which in whole with ideas in legs, retractable gear, controllable propellers, with variable power requirements, etc.

Langewiesche emphasized the need for improved spiral stability, and pointed out that the greatest problem of present-day instrument flying was the necessity to stay on the outside constantly. "Make airplanes fly straight if you leave them alone," he said.

He called for a plane which the pilot could leave alone for two or three minutes at a time, instead of two seconds, while flying instruments so that the pilot would have time to check his charts and make his calculations.

• **Small Field Performance**—July 4th level need for a personal plane with small field performance, as indicated by the survey of 154 field use operations which preceded the Bellingham-Tully report. Tully stated a survey of 4000 operations out of a total of 5000 found last year in his survey would be "optimistic" since the GI flight training program was out.

He stated that since of 40,000 to 50,000 planes a year, or 16 to 15 per operator, was required to support the present number of operators. This compares with only 15,000 planes sold in 1947. He estimated that improved aircraft which can give added utility by close-in landings are essential.

Spokesman for three aircraft companies, Don Sellen, General Aircraft, Jerry Glavin, Beach aircraft, and Ray Herman, Aerocraft chief engineer, pointed out economic problems of the manufacturers in making the design changes recommended. Glavin pointed out the Ryan factory, which the Beech Model 17 biplane of six years ago, pointing out improvements.

The manufacturers' spokesmen agreed, "tell the public what we have, a usable product, not speed on time becoming an unfortunate fact."

When you're glad you have  
a **Snap-on**



**Snap-on**  
**Heavy Duty Ratchet**  
speeds landing gear service  
... keeps 'em flying!

EXTRA powerful leverage . . . precision-built, reversible anchoring mechanisms . . . year-after-year dependability . . . these are the features you find in a Snap-on



Heavy Duty Ratchet. It's bulky enough to hook loose the slightest of those large nuts and bolts . . . its efficient, smooth-working action helps cut "down time" to a minimum.

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## NOW SERVING EVERY TYPE OF AVIATION IGNITION

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AVIATION WEEK, July 19, 1948



First 1947 production Silhouette Sedan with Luscombe Chief Test Pilot Hester Suggins

## Closeups of the Luscombe Silhouette Sedan



Usual flight view of 1949 Silhouette Sedan



Looking light installation in nose



Bonny interior viewed through nose window.

## New Orders for Four-Placer Bring Stepped-Up Production

Production of Luscombe's Model 11A Silhouette Sedan at the Dallas plant is being stepped up from one a day to take care of additional orders for the \$6995 all metal four-placer.

First detailed performance figures and specifications announced for the production model yesterday. Top speed, over 140 mph; cruising speed, 110 mph; starting speed with flaps, 35 mph; without flaps, 28 mph; rate of climb at sea level with gross load, 965 ft./min. service ceiling, 17,000 ft.; altitude rate, 500 ft./min. landing roll, 500 ft.; fuel capacity, 42 gal.; fuel consumption at cruising 9 gal./hr.; range over 500 miles.

Engine, Continental R-165 which delivers 165 hp. at 2050 rpm. and 120 hp. (normal cruising hp.) at 1850 rpm. Propeller, Sensenich, fixed pitch, 58 in. diameter.

Wingspan 18 ft., wing area, 165 sq. ft., length 23 ft. 6 in., height 6 ft. 10 in., maximum cabin height, 51 1/2 in.,

SALES & SERVICE

43



Individual carburetors



Individual carburetors

maximum wheel width, 45 in.; baggage compartment capacity, 6 cu. ft.; main cabin cargo space, 60 cu. ft.; door size 37 by 45 in.

Window area, approximately 3716 sq. in.; gross weight, 2250 lb.; empty weight, 1148 lb., with standard equipment, or 1250 lb., stripped for cargo carrying. Useful load, 940 or 1020 lb.; cargo load allowance with pilot and full fuel load, 680 lb.; main gear track (center-to-center) 109 in.

Phase is of all metal construction with two spars, stressed-skin wing, with single spar-welded rib structure. Flaps and bridle are hydraulically operated.

Standard equipment includes DeSoto 8000 starter and generator, Kellhouse and Asquith flight instruments, Muncie tailwheel, Willard battery, AC and Street-Wayne engine, alternator, landing and position lights, individual carburetors, six trays with lighters, cup rack, sound proofing, heater.

#### Airport Wins

Shenandoah Airport is back on its old flying time schedule—open seven to a half hour before sunset.

The Department of Defense and Aviation set down on the field's flying hours on June 1, when it placed a 7:00 p.m. deadline on the airport's activities. Hence, an outdoor movie near the field resulted in some 1000 viewers (AVIATION WEEK, July 5).

Edward J. McCormick, president of the airport, said the bulk of his business occurred just before sunset. The new order followed McCormick's fifth show since 1960.

#### BRIEFING FOR DEALERS & DISTRIBUTORS

**OREGON AIRPORT RULING**—Injunction against Sta. Paul Airport near Clatsop City, sought by adjacent property owners, has been denied by Judge James W. Crawford, Portland, who ruled a legally established airport cannot be shut down from reasonable operation even if operations of the field does involve a measure of discomfort and unpleasantness to nearby residents.

Plaintiffs had claimed low flying aircraft decreased the value of their property.

Judge Crawford ruled that persons residing in unincorporated areas must assume the risk of a legitimate use of adjacent property which may to some extent impair their enjoyment of their own property. He found an absence of evidence that the aerial operations had failed to exercise reasonable concern over convenience, safety and comfort of the plaintiffs.

**SALVAGE LAW INVOKED**—Laws of salvage are being invoked against McFadden Flying Service, Inc., Belmont, Tenn., St. Paul, in connection with a lightplane which crashed into the Mississippi River near the airport and took out of sight. Pilot and student escaped to shore. Peter St. Paul was killed in the water, and then McFadden brought legal action to recover the craft.

Attorneys for the men who headed it out of the river now are asking \$600 salvage claim, contending that the Mississippi is a navigable stream and that maritime law should also apply there. McFadden's insurance company which is fighting the case contends that regardless of the situation, the airplane is not a ship and is not included under salvage law.

**ACCESSORY SHOW**—Later indications are that the trade show is in conjunction with the ADMA-NATA joint meetings in Cleveland will be largely confined to accessories. The show is scheduled for Nov. 15, 16 and 17 and will be restricted to manufacturers' members of ADMA. The ADMA show will be held at the Statler, while NATA will be meeting at the Alhambra. In addition to the meetings and show, there will be a series of informal conferences between dealers, distributors and manufacturers.

**BIDS FOR MAINTENANCE AIRSTRIP**—CAA has approved money and facility improvements at Midland Downtown Airport, Midland, and bids for construction are to be invited sometime this month. First step of the improvement costs approximately \$200,000 of which the federal contribution is \$100,000, the remainder contributed by the city (\$80,000) and state (\$20,000).

When completed the field will be able to handle two-engine planes as large as DC-4s. In addition to runway lengthening and enlargement, new facilities will include taxiway, outcropping lot, and water and sewer lines.

**AUTO DEALER USES NAVION**—Sample of the man to whom a successful businessman can put a business plan is the wily but J. D. Porter, Ford, Texas. Chevrolet dealer is getting out at his four-place Navion. Porter says he makes at least 25 hours a week a month between Dallas and cities like Memphis, St. Louis and Nashville.

Some of these men made to carry fifteen to pick up automobiles, while other tops on his hauling equipment to Memphis for quick repair, transporting executives to meetings and conferences and providing good will. Most car dealers could use a place like it to end all arguments. Porter asserts.

A frequent use also checks is a promise to a prospect that Porter will be him to the factory to get delivery of his car.

**SHIRING RUNWAYS**—Transportation and maintenance personnel effects on takeoff and landing performance are accentuated for lightplane pilots in a new CAA Safety Bureau Bulletin No. 180-40. The bulletin lists a typical lightplane with a wing loading of 7.5 lb. sq. ft. and a gross loading of 21 lb. sq. ft. as a light landing New York where altitude is 79 ft. above sea level in Denver where it is 5121 ft. above sea level. The runway required at other en route. They range from 603 ft. at New York to 1260 ft. at Denver, with the temperature at standard 99 degrees Fahrenheit. On a hot day of 108 deg., the bulletin says the takeoff run would increase to 793 ft. at New York and to 1946 ft. at Denver.

—ALEXANDER MURPHY



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## Big, Modern Chicago Forge Plant SURROUNDED BY MARKETS

Located in Cicero, Illinois, in suburban Chicago, this complete steel forging plant is practically "next door" to ample sources of supply, and is right in the middle of a huge industrial market area. Close at hand are manufacturers of farm equipment, aircraft, industrial machinery, tractors and trucks, railroad equipment, automotive equipment, and fabricators of hundreds of other industrial items — all of whom have need for steel forgings. A number of these customer neighbors already know the expansion of this plant for precision forgings and have been steady buyers.

### Plant Now in Operation

This plant is for sale as a whole. It is now in operation and has an outstanding production record. Purchase of this plant can, by an economic additional investment, make it completely self-sufficient. It consists of eight buildings on an 8½-acre site, together with all machinery and equipment. Total floor space is approximately 85,000 sq. ft. Rail, highway and water transportation facilities are excellent. All utilities are available through local services.

The Government desires so well of this plant

that it is offered for sale, subject to provisions for the national security. This means that the Federal Government retains dormant rights to utilize the facilities under Government contract. In the event that this dormant right is exercised, the Government will consider the qualifications of the buyer to carry out such contracts.

### Sealed Proposals Invited

Sealed proposals are now invited for the purchase of this property as a whole. Bids will be received by the War Assets Administration, Office of Real Property Disposal, Washington 25, D. C., until July 28, at 2:00 P. M., E.S.T. (2:00 P. M., E.D.S.T.). At that time, all bids will be publicly opened and read at the Office of Real Property Disposal in Washington.

Write at once, to the address below, for a detailed description of this property and for your copy of the invitation to bid which will be helpful in submitting your proposal.

This advertisement is not a basis for negotiation. War Assets Administration reserves the right to reject any or all bids. Transfer of this will be subject to Executive Order 9800 relative to feasible materials.



## AIR TRANSPORT

### New Mail Rate Gives C&S Profit

While setting pay high enough to wipe out carrier's 1948 deficits, CAB hints that fares should go up.

Chicago & Southern Air Lines has found that most of the air transport industry is seeking a silver lining in the dark clouds piled up by heavy post-war losses.

Civil Aeronautics Board is a stepping-stone office paid C&S sufficient additional rail pay to wipe out more than half of the \$1,365,000 operating operating deficit incurred by the carrier during 1946 and 1947.

At the same time the Board set up new domestic mail rates retroactive to Jan. 1, 1948, which give the company a profit for the first six months of this year and provide reasonably bright prospects of future earnings.

**Lower Net Prices** — C&S' action brought attention to the industry action of some of the nearly \$21,000,000 in operating losses suffered by the 16 domestic airlines in 1947. Other carriers' profitability is expected to be able to pay C&S in recompense a substantial part of last year's losses through mail pay adjustments.

Not a member, including American, Northwest, United and TWA, apparently are based upon the 1947, the previous CAB decision. These losses, which lost more than \$15,700,000 on domestic operations in 1947, were divided of mail pay adjustments for periods prior to Jan. 1, 1948, in the Board's "big fix" opening three months ago (AVIATION WEEK, Apr. 15).

**Pilley Defiant** — A meeting which appears to the entire combined airline industry recommended the award to Chicago & Southern. CAB said fairly it would not use mail pay to compensate a carrier for all of the losses incurred since among them the current inflation spree.

"Further increases in passenger and cargo rates may well be required if rising post and wage levels continue to be reflected in increased unit and all-weather traffic," the Board declared.

"There can be little economic justification at this stage of an important development for a re-evaluation of the mail pay the industry with increased mail pay the total impact of rising prices and wage levels upon operating costs, irrespective of whether subsidy as service mail rates are established.

"It is," the Board emphasized, "your

as important in this industry as to adjust that the selling price of the product produced be kept in reasonable alignment with the price and wage levels reflected in the costs of such product."

**Passenger Fare Boost** — CAB recognized, however, that Chicago & Southern had met part of its increased operating loss last year when the company went along with the rest of the industry in raising passenger fares 33 percent. Whether this last hike will prove sufficient to cover the operating deficit of 1948 is open to question, the Board indicated.

Fare increase talk had already begun to spread through the industry before CAB defined its position to C&S. United Air Lines has hinted at an upward movement that there is little enthusiasm for a fare hike, which would be the third since April, 1947.

The statement of tentative findings issued in the Chicago & Southern case said also offered that carrier \$3,380,000, at 20.95 cents a revenue plane mile, for services performed between Jan. 1, 1948, and Dec. 31, 1947. The amount needed by \$1,055,800 the payments actually made to C&S under its latest rates over the two-year period.

and cuts the 1946-1947 operating deficit from \$1,867,000 to about \$800,000.

**Minimum Loads** — Since Jan. 1, 1946, Chicago & Southern's mail rate had been 60 cents a ton mile with a maximum capacity factor provision. Under this setup, the company was paid for minimum mail loads whether or not the loads actually were carried.

A new mail pay formula, retroactive to Jan. 1, 1948, specifies sliding scale mail compensation linked to Chicago & Southern's passenger load factor. Similar formulas have been set up for Continental Air Lines (Aviation Week, Nov. 24) and other carriers.

The new rate that C&S will over the maximum base rate pay of 14 cents a revenue plane mile when its monthly passenger load factor is below 57 percent. For each one percent increase in the passenger load factor above 56 percent, the base rate rate per plane mile will be decreased by 1.03 cents. The maximum mail payment of 8.5 cents a plane mile will be made during months when C&S' passenger load factor is 81 percent or higher.

**Incentive Provided** — Since a one percent increase in passenger load factor more than offsets a 1.03-cent drop in mail pay, C&S will have every incentive to boost traffic rather than rely on the minimum possible rate of subsidy. The formula is designed to permit the company to break even under present passenger loads at a passenger load factor of about 53 percent.

At its lowest average annual passenger load factor of 49.09 percent, C&S would receive 26 cents a plane mile mail pay and could make a 3.4 percent profit on its revenue after taxes. But if the company had up its



### NEW HANGAR FOR UNITED

One of two hangars recently opened by United Air Lines at Chicago Municipal Airport, this one has an extensive floor area of 275 ft., a height of 85 ft., and a 12-ft. depth. It can accommodate three

DC-4s at one time. With its expanded facilities being linked to retail completion, UAL now occupies more than 235,000 sq. ft. of office space in hangars, shops and offices at Chicago.



traffic in an average passenger load factor of 70 percent during a future year, it could save over 15 percent profit. Still higher loads would yield still higher profits, but in fact would require an load factor dropped below 51 percent.

► **Higher Earnings Possible**—No action against unbalanced development is provided in the contract that Chicago & Southern intends to develop additional revenues from express, freight and incidental services above the level forecast by CAB. Similarly, any concerns the carrier's management has about the carrier's management of its operations through effective cost controls or improved operating procedures which serve to increase operating rates below the level established by the Board will result in higher earnings.

For the period after CAB extends its service beyond Mexico to Canada, Venezuela, the Chicago route domestic rate will be based on an average rate of 21 cents a plane mile in a 60 percent passenger load factor. This lower rate results from the absorption of a greater proportion of revenues in excess to the domestic operations of Chicago & Southern's international route—which has a separate and higher unit rate. Service on the new route to Canada is slated to begin within 30 days.

► **Deficit Vanishes** — CAB President Charles Patten expects the new unit formula to yield his company a \$39,000 net profit in the first six months of 1948. Under the old formula, a \$180,000 deficit for the period appeared in prospect.

Except for the fact that Chicago & Southern's operating costs were found to be excessive by the board, the board would have seemed sufficient if the carrier would have turned sufficient all-around net pay to yield no overall profit for 1946 and 1947. CAB declined, however, to do this. Instead, the board's ruling imposed \$1,075,000 in excess during the twelve-month period which came about largely because of overcompensation.

But the board complimented the carrier's management for taking early corrective action after traffic began sharply decreased during the first half of 1947 instead of continuing the upward trend. By the second half of last year, economies instituted by CAB brought operating costs down to levels that were considered proper by CAB.

#### More Convair-Liners

American Airlines will add eight additional Convair-Liners into service July 1. Of the 75 Convair-Liners ordered by AA, 19 were in regular operation early this month.

## AA and SWA Elect New Officers

American Airlines and Southwest Airlines have elected new vice presidents.

William J. Elger, AA's executive vice president, was appointed a vice president at a recent board of directors meeting. He will continue to hold the title of treasurer.

For R. Marshall, a Southwest's new vice president, he joined the company in 1941 and has been operations manager since its inception as a certified feederline in December, 1946.



Elger

Marshall

Meanwhile, American also announced the election of John C. Zevilly as assistant vice president and the resignation of assistant vice president M. J. Stohler. Zevilly has been American's general attorney for two years. Stohler left the company to form a television business partnership in Texas.

► **Other personnel developments**

CAB-McCord Airline, assistant chief examiner of the safety enforcement preconference division, has become the Board's staff liaison officer for federal state relations.

Colonel-Wilfred M. Hinson, vice president has been placed in complete charge of public relations.

Charles E. Crissman, acting operations manager, has been named operations manager.

► **Public Officials**—Edna Jones was elected president of the annual stockholders conference last month.

► **EACA**—The Board has become general traffic manager. He succeeds W. M. McGowan, who resigned to join the traffic organization of Western Steamship Corp.

#### New Feeder for Southwest

American Airways, Phoenix, has been named the temporary feeder certificate awarded by CAB in its Arizona New Mexico route decision last February.

The carrier had told the Board that adequate airport facilities are available to permit expansion of service at 17 of the 20 points on its routes (Aviation Week, June 7) CAB also

decided that Arizona Airways had reorganized its financial structure in accordance with conditions for issuing the certificate had down last February. President H. G. Nelson began to inaugurate DC-3 service this summer over the new route, which includes out of Phoenix to Yuma, Douglas and Winslow, Ariz., and San Francisco, Calif.

## All American Hopes For Feederline Fade

All American Aviation's prospects of snipping all at just at its pickup routes for a feeder system before late fall are growing dim.

The carrier now designated for provisional short-haul service in CAB's Middle Atlantic Area operates last February. But income at the time was not adequate to support the carrier's operations.

► **Problems Ahead**—Comments included on AAA's pickup routes that not designated on the feeder line have not been adequate to support the carrier's operations and on a failing (within a year) that the feeder route will not adequately duplicate the carrier's pickup lines.

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## PAA Pleads for Domestic Routes

Carrier prepares for last-ditch stand as CAB hears oral argument this week on application.

Pan American Airways has come out swinging in the final round of its contest for domestic routes.

Civil Aeronautics Board is scheduled to hear and argument this week on PAA's application for eight trunk routes linking 13 principal U. S. cities and covering 14,610 miles. And Pan Am has already revealed its strategy for beating down the protests of eleven domestic carriers, which face the proposed competition, and the Post Office Department's demand that the new routes would result in little benefit for the mail service.

► **Post Office**—In a new leaf to the Board, Pan Am's carriers state that with the complete of PAA's new routes, major U. S. airline tend to international service where traffic potential is small compared with domestic volume. They are higher, and agencies are at the mercy of unskilled consular and political conditions abroad in the world.

American's greatest natural asset in international air transport lies in the fact that most of international traffic in U. S. origin, PAA declares. "Thus the government should enable its largest international airline to carry international traffic to and from major ports of origin in the U. S. as an effective policy, not just to catch up with advantages bestowed on foreign competition."

Argument of domestic carriers, who compete abroad with Pan Am, is in the effect that competition at home would be uncommercial, particularly in view of their alleged "deficit" costs. Also, no service, the local carriers claim, that there is not a particle of evidence that any difficulties of the domestic airlines are due to lack of traffic or an competition on trunk routes.

► **PAA Victory Doubtful**—To date, PAA apparently is losing its fight for domestic routes. A CAB decision early this year ruled the Board to deny the carrier's plea for all but one of the eight links requested (Aviation Week, May 18). Financial losses suffered by domestic carrier since PAA originally applied for its U. S. routes only in 1945, together with the anticipated leveling off of traffic last year, undoubtedly will make CAB extremely cautious in authorizing any new service.

Already criticized for over 94,000 miles of international routes, PAA's carrier application, even domestic links between Boston and Miami via New York, Philadelphia, Baltimore and Washington, Boston and Houston via New Orleans, Chicago and Mexico, Detroit and Houston, New York and Seattle, New York and San Francisco, New York and Los Angeles, and Los Angeles and Seattle. All of the points listed are now gateway to Pan Am's own international services. The CAB cannot recommend that PAA be granted so much as a 1100 mile link from New York to Miami.

► **TWA Hit**—TWA's opposition to Pan Am's application (which would cut between 32 and 37 percent of all domestic traffic if granted in entirety) is again being hit. TWA, which competes with PAA nationally, has made no attack on the latter's offer.

"Moreover, because Pan Am's application is aimed at the domestic field," TWA charges, "it is not public convenience and necessity but rather average growing out of its losing battle to retain a monopoly of American flag international air service. PAA has received various city officials, whose support they have endeavored to solicit, with promises and proposals to operate larger and larger airplanes than those now in use."

► **TWA Declares** that PAA is asking Civil Aeronautics Board to make a colossal gamble on the basis of Pan Am's estimates that next year's airline traffic will be more than four times last year's volume. "No application in CAB history," TWA declares, "has been founded on fewer facts or as more groundless, and yet promises to give the public advantage in the risk that is demanded."

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#### TROUBLE SHOOTER INSTALLED

Demonstrations of the Sperry diagnostic engine analyzer were recently completed by Pan American Airways for engineers and pilots on its latest American division. Sperry rig-up the central shaft and engine on engine indicator in the cabin of a Sperry engine indicator, Capt. R. W. Wood (left) mounted the pilot for the latest American division, is shown.

## No New Fire Rules For Now, Says CAB

No new regulations concerning blast prohibitions against landing on airports lacking adequate firefighting equipment are an immediate prospect, according to CAB officials, but will be the President's Special Board of Inquiry on Air Safety.

The Civil Aeronautics Board has decided this problem could, in the time being, be handled through administrative action by the Civil Aeronautics Administration under general rules requiring adequate facilities and equipment at airports. CAB is currently using this authority to require airports to acquire

looking over the maintenance in Frank Brown, Sperry engine, explains the device. From right of John E. Longberg, Jr., PAA engineer, the engine analyzer was developed in cooperation with Sperry. The analyzer is hooked up to the engine by two sets of wiring—one to the ignition, and the other to each combustion cylinder register voltage within each cylinder.

and on its ground fire-fighting equipment.

► **Standards.** Lacking the possibility of financing a significant domestic aviation program, the FAA is expected to set "adequate fire-fighting equipment" as one of the widely varying conditions at thousands of faltering airports throughout the country as it moves to the principal issues for deciding the effect of control by specific regions.

The President's Special Board of Inquiry on Air Safety had urged adoption of a regulation specifying minimum fire-fighting equipment to be kept on hand at airports and prohibiting scheduled air carrier operations at fields not meeting the minimum standards.

CAB and close study of the regional and standards with reports, brief assessments, the National Association of Fire Chiefs, numerous organizations and effect had produced little in the way of concrete suggestions for reasonable minimum standards in respect to fire-fighting equipment.

The Board reported that CAB already has made real progress in improving fire-fighting equipment at airports and enacting regulations and will further emphasize the need for improved crash and rescue equipment.

Upshot of CAB's consideration of the language problem of several bills at airports was the conclusion that the only really satisfactory solution would be

development of non-federally funded and local assistance along these lines but here ended way for some time. The Fire Protection Committee of the National Advisory Committee for Aeronautics.

## Airline Deficits Still Run High

A sluggish early spring traffic report failed to put the domestic air transport industry into the black this year. In 1947, the 16 controlled domestic carriers showed their first or only operating profit in April. But in April, 1948, they showed \$2,599,536 in the red and setting their sights on a profit by May.

► **Passenger Traffic.** Down-tilted the loss, passenger traffic here winter losses in the continued slump in passenger business. During the first quarter of 1948, passenger traffic was about five percent under the same 1947 period. In April, the level was a disappointing nine percent under last year's level.

Five airlines—Braniff, Continental, Eastern, Mid-Continent and TWA—five more revenue passenger miles in April, 1948, than in April, 1947. American showed the greatest decline, down 114,428,000 revenue passenger miles in April last year to 97,919,000 in April, 1948.

► **Losses.** Continued—The \$1,075,146 operating loss in April of this year must be added to the \$11,846,086 operating deficit during the first quarter. Since the 16 domestic carriers lost a record \$11,748,761 in first quarter 1947, their deficit for the first four months of last year is still considerably higher than in the same 1946 period despite the April deficit.

Traffic continued to set the tone in profits during April despite \$846,079 a revenue increase, a revenue down from the \$1,506,864 earned in April, 1947. Continental had the largest operating loss for the month—\$455,028.

## Joint Terminal Plan Ends

A major experiment by the certified airlines in the use of a common facilities is located for abandonment.

The Air Transport Association's board of directors has decided to drop the consolidated terminal services at Willow Run Airport, Detroit, after a year of operation. ATA recommended that the Airline National Terminal Service Co., which serves the Willow Run airport, be dissolved.

Facilities performed by ANTSC for the seven controlled carriers serving Detroit included baggage, cargo services, handling of baggage, cargo food and snack and refreshments. High costs and lack of efficiency had kept the operation under fire from participating airlines since last summer.

## Air Transport Booms in China

Chennault's airline flies supplies to blockaded areas, brings out local products—and makes money.

Carl Air Transport of China has maintained in two years from a collection of negligible war surplus transporters rating as obsolete in two million for the month airline operating cost as low as \$100,000. After only 18 months of flight operations, the line has paid off the \$2,300,000 (U.S.) loan with which it started and is operating regularly well into the black.

Spunk pilot of CAT is Maj. Gen. Claire Lee Chennault, former commander of the Flying Tigers and the U.S. 14th Force in China. Chennault began his airline career at the age of 36 after 25 years as an air corps fighter pilot and aviator. Most of his air transport business has been done since the first year of war, operating an air force of from 100 to 1,000 planes as the end of an airborne supply line across the Huang river into Asia. As president of CAT, Chennault is working with the most basic operational problems of his wartime experience.

► **C-46 Fleet.** CAT now operates a fleet of 15 C-46s and three C-47s and has been averaging better than a million hours a month since October of 1947, with a peak of two million two miles in April. Its routes stretch from the ports of Canton and Shanghai to deep into China's interior, as far as Russia border and from Manchuria to French Indo-China.

Recent loss in CAT operations has been the Chinese Civil War. Gen. Chennault's airline has been based on a

ring of airbases and other local bases of communications between Nationalist-held cities. In these situations the Chinese government relies heavily on CAT to supply food, medical supplies and industrial equipment for the civil population of the beleaguered areas, and to carry these products to markets that would otherwise be cut off by the Communists. During the six-month Communist siege of Mukden in Manchuria, CAT has been the city's only link to the outside world.

► **Shen Kai-Gong.** Chennault has been CAT's most successful captain. The C-46s he flew were chosen from the production centers of Sioux and Tulsa where the Communist forces in the great mills of Yantai, Yunnan and Tientsin. On its return trips, CAT carries food and other goods, left behind and food to the blockaded areas. Last winter when snow blocked the railway at Shen, Kwei's capital, the government put \$1,000,000 to work clearing it so that CAT planes

could restore operations. When CAT pilots complained about crowded landings at Shen, the government ordered a new runway built to their specifications.

CAT was organized in the summer of 1946, primarily to break a bottleneck in UNRRA relief goods that were piling up at Canton and Shanghai, unable to reach street cars in the interior because of lack of transportation. Chennault, whose aircraft had been responsible for carrying half the private supplies of Chennault's river shipping and packing all of China's main inland routes when they were Japanese occupied, proposed running his wartime operations by using the Japanese built fields at Canton and Shanghai as a base for air transport to the inner American fields in the interior.

► **UNRRA Loans.** He put an UNRRA loan of \$2,000,000 to buy equipment and material worth \$1,000,000. Chinese businessmen in the interior to finance relief operations. For his main warehouse, Chennault picked the C-46, backbone of the heavy equipment. He has been from war surplus in Russia and had ones in the United States to put them in flying condition and ferry them to China. There they were dropped at 7000 lb. of wartime equipment and a total of 1400 lb. in payload (100 lb. in carrying equipment was added). Stowage load 10 mph. to the cruising speed of the plane, 1,000 mph.

CAT now operates its C-46s at 45,000 lb. gross with a cargo load and 40,000 lb. when passengers are carried. Flight tests have shown these C-46s can get adequate single engine performance up to 5000 ft. with a 45,000 lb. gross CAT payload, very close to a 10,000 lb. maximum to 12,000 lb., according to airport regulations.

► **Financial.** Problems—CAT's financial problems are intricate. Its revenues are entirely in Chinese currency that fluctuates and has depreciated from an exchange rate of 500 to one in 1946 to one in 10 million in 1948. CAT's fuel costs are fixed for only eight days at a time. Gasoline can be bought for only 10 cents a gallon. The price varies from 60 cents a gallon on the coast to 92 a gallon in the interior. CAT succeeds for one-third of CAT's operating costs.

The airline now has 100 employees of which 70 percent are Chinese. American are mainly pilots, one chief and one executive. Salaries have to be changed



Chennault

monthly to keep pace with China's currency inflation.

Chennault has introduced many of the tricks of American airline operations into China although what passengers are carried into blockaded areas or cargo flight routes accompany foreign currency. He has, for example, set up a base outside the airport after landing and before takeoff and planes are decorated with the names of various towns on CAT's routes. Chennault is concerned with building his service as the local problems of the most CAT areas and spends a lot of time guaranteeing new markets for their products.

All such operations as Chennault must have to spend English as well as Mandarin. Most CAT pilot pilots are ex-Marines who used to fly C-46s for the Marine command in North China. When Chennault's operations, trained in the United States during the war on a C-46, are now being run. Chennault is in the field, a fighter pilot with the original Flying Tigers and veteran of C-46's heavy operations.

► **Overhead.** Capital—CAT's overhead is a surprise. Because of the lack of normal savings facilities in China, it operates its own savings bank, savings bank and its own insurance company in addition to carrying goods and sales staff. This is believed by equally high rates. CNRRA has long policy on all CAT cargo space. The airline can sell all its remaining capacity consistently. Most other airlines have moved from the coast inland with the local land money commercial.

► **Cargo Rates.** CAT carries CNRRA (Chinese National Relief and Rehabilitation Administration) cargo at 66 cents US a ton. This compares with a CNAC, Fin Air affiliate, rate of 99 cents to CNRRA. Ties to combat zones (Shanghai) are flown at 21 cents

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the normal secondary rate. Rounding to Maklon now costs 21 billion Chinese dollars. CAT's report says it took for six months in advance and Chennault estimates the total shift available in China now including CNAIC and CATC is about one-third the demand.

Governments recently awarded CAT's operating franchise for another year and now imposed not only with the need of relief transport but also with the fact that CAT operations had boosted China's export totals by over a billion dollars last year. Commercial business is based primarily on Chennault's encyclopedic knowledge of China. For example, a special type of box known to have from northwest China that brings \$3.50 U.S. per lb. Recently an operation was set up to haul tin from Yunnan which had been closed due to lack of transport for getting the ore to a market. With a world tin shortage, it brings \$1840 a ton and Chennault's C-46s can haul 300 tons a month from the mine to the French port of Haiphong in Indo-China, at the height. Overhead, the haul takes a minimum of three months.

News of the ability of CAT to deliver the goods to market has spread all over China, and local provincial governments are petitioning Chennault for CAT service to meet their local needs. Recently the Maklon of Sinkiang appealed to Chennault to extend service to that capital to be the aerial and ground machinery needed to avoid a threatened famine. There is no gas available in Sinkiang, but CAT gets there by flying one C-46 tanker wing to jump two cargo planes on the way.

### Flashbulbs Get O.K.

Following extensive tests by government, airline and manufacturers' engineers, nine major airlines have announced their ban against shipment of flashbulbs by air.

Original ban followed fear that flashbulbs are liable to premature ignition by radar or other high frequency waves. Airlines which have succumbed to this American, Eastern, Mid-Continent, Missouri, Northeast, Pan American, TWA, United and Western.

### Approve Western Loan

Civil Aeronautics Board has approved Western Air Lines' application for a \$2,500,000 loan from the Reconstruction Finance Corp. Money is to be used to complete the carrier's financing of Cessna-Luxair.

## CAB to Investigate Hughes' TWA Loan

The Civil Aeronautics Board has indicated to make a thorough investigation of whether the lightened control line and Hughes obtained over TWA last year it is the public interest.

Repayments will be directed at a \$10,000,000 loan made by Hughes TWA Co. in TWA only in 1945, when the airline was in desperate financial straits. Under the loan agreement, the funds were exchanged for TWA's 21 percent notes, which are convertible to Hughes equity into TWA common stock.

Additional Central Bank-CAB board that the loan agreement would enable Hughes to acquire up to 80 percent of TWA's common stock, and used a probe to determine whether that expanded control should be approved. In October, 1946, CAB had sanctioned Hughes' control of about 45 percent of TWA's common stock.

The Board explained that a 45 percent interest in TWA gave Hughes sufficient power to determine matters but not all of the carrier's corporate activities. With a 45 percent holding, Hughes could control TWA's board of directors and thereby manage the day-to-day business and financial affairs of the airline.

► **New Power Defied** — But without the aid of other stockholders, Hughes 45 percent interest was insufficient to permit him to control TWA's certificate of incorporation or take action with respect to such vital matters as merger, liquidation or dissolution of the carrier. Through conversion of the \$10,000,000 worth of notes, Hughes can vote stock, Hughes could gain complete control.

TWA stockholders are slated to vote Aug. 18 on a proposal whereby Hughes would immediately exchange his notes for 1,800,000 shares of TWA common stock (Aviation Week, June 26). This transaction would increase Hughes interest in TWA from 45 percent to about 75 percent.

### Fourth of July Peak

United Air Lines hit its all time peak in passenger traffic only this month. The carrier flew an estimated 17,452,800 revenue passenger miles over the fourth day of July and from previous years 17,100,000 revenue passenger miles on the Memorial Day week end. During the Fourth of July week end last year, UAL flew 16,500,000 revenue passenger miles.

Meanwhile, on July 8, United mailed a significant increase in its 22 years of operation by carrying its new 44th passenger.



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# The Birdmen's Perch

by Major Al Williams, AAS, "TATTERED WING TIPS,"  
Gulf Aviation Products Manager, Gulf Bldg., Pittsburgh 30, Pa.

## Good News by the Canful!

And in case you weren't around last month, here's what the great new oil is that has done:

1. Lubricates even those hard-to-reach spots of well-free sticking valves and stays and keeps them free until longer. That means money saved on top overhaul.

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it's flushed away at all times! That means that your wear is longer and you save money on replacement.

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Does that sound good? Here's more: The new Gulfpride Aviation Series D

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But remember... Gulfpride Aviation Series D is for homogeneously opposed engines. For all other types, keep on using Gulf Aviation Oil or Gulfpride Motor Oil.

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## ADVERTISERS IN THIS ISSUE

AVIATION WEEK—JULY 19, 1948

A C Shack Flug, Inc. of G.M.C.	41	Blair Tanning, Inc.	51	Robert Applegate, Ltd.	52
Agnew-R. B. Barker & Co., Inc.	42	Infante Corp. (Pa.)	52	Applegate, Ltd.	52
Almaly, Rudy Corp.	43	Agnew-R. J. Perkins & Co.	53	Walter Motor Tools Co.	53
Agnew-Barker, Barker, Moore	44	Kaplan Co., Inc.	54	Agnew-Thom & Co. Ltd.	54
Almaly, Rudy Corp.	45	Agnew-Kramer, Dugdale & Co., Inc.	55	W. A. Anderson	55
B. B. Smith Co., Inc.	46	McGee Corp.	56	W. A. Anderson	55
Agnew-Howard, Howard, Ltd. Co.	47	Agnew-Rose, Wagoner & Assoc.	57	W. A. Anderson	55
Agnew-Kramer, Dugdale & Co., Inc.	48	Blue Machine Tools Co.	58	W. A. Anderson	55
Agnew-Kramer, Dugdale & Co., Inc.	49	Agnew-Edward, Dugdale & Co., Inc.	59	W. A. Anderson	55
Chas. Mass. Inc. of G.M.C.	50	Prods. Alameda Corp.	60	W. A. Anderson	55
Agnew-Campbell, Campbell Co.	51	Agnew-Rose, Wagoner & Assoc.	61	W. A. Anderson	55
Chas. Mass. Inc. of G.M.C.	52	Agnew-Rose, Wagoner & Assoc.	62	W. A. Anderson	55
Chas. Mass. Inc. of G.M.C.	53	Agnew-Rose, Wagoner & Assoc.	63	W. A. Anderson	55
Chas. Mass. Inc. of G.M.C.	54	Agnew-Rose, Wagoner & Assoc.	64	W. A. Anderson	55
Chas. Mass. Inc. of G.M.C.	55	Agnew-Rose, Wagoner & Assoc.	65	W. A. Anderson	55
Chas. Mass. Inc. of G.M.C.	56	Agnew-Rose, Wagoner & Assoc.	66	W. A. Anderson	55
Chas. Mass. Inc. of G.M.C.	57	Agnew-Rose, Wagoner & Assoc.	67	W. A. Anderson	55
Chas. Mass. Inc. of G.M.C.	58	Agnew-Rose, Wagoner & Assoc.	68	W. A. Anderson	55
Chas. Mass. Inc. of G.M.C.	59	Agnew-Rose, Wagoner & Assoc.	69	W. A. Anderson	55
Chas. Mass. Inc. of G.M.C.	60	Agnew-Rose, Wagoner & Assoc.	70	W. A. Anderson	55
Chas. Mass. Inc. of G.M.C.	61	Agnew-Rose, Wagoner & Assoc.	71	W. A. Anderson	55
Chas. Mass. Inc. of G.M.C.	62	Agnew-Rose, Wagoner & Assoc.	72	W. A. Anderson	55
Chas. Mass. Inc. of G.M.C.	63	Agnew-Rose, Wagoner & Assoc.	73	W. A. Anderson	55
Chas. Mass. Inc. of G.M.C.	64	Agnew-Rose, Wagoner & Assoc.	74	W. A. Anderson	55
Chas. Mass. Inc. of G.M.C.	65	Agnew-Rose, Wagoner & Assoc.	75	W. A. Anderson	55
Chas. Mass. Inc. of G.M.C.	66	Agnew-Rose, Wagoner & Assoc.	76	W. A. Anderson	55
Chas. Mass. Inc. of G.M.C.	67	Agnew-Rose, Wagoner & Assoc.	77	W. A. Anderson	55
Chas. Mass. Inc. of G.M.C.	68	Agnew-Rose, Wagoner & Assoc.	78	W. A. Anderson	55
Chas. Mass. Inc. of G.M.C.	69	Agnew-Rose, Wagoner & Assoc.	79	W. A. Anderson	55
Chas. Mass. Inc. of G.M.C.	70	Agnew-Rose, Wagoner & Assoc.	80	W. A. Anderson	55

PROFESSIONAL SERVICES—	
See list on page 56	
RESEARCH SECTION	
(Detailed bibliography)	
EMPLOYMENT	
Positions Vacant	56
Positions Wanted	57
SPECIAL SERVICES	
EDUCATIONAL	
Books	58
PLACES-EMPLOYMENT	
Used or Single Vests	59

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# EDITORIAL

## Important Step in Air Safety

Activities of the Flight Safety Foundation is one testimony to the fact that safety is a youthful and, for that reason, a sometimes short-sighted industry. The casual test of maturity will be the extent of financial contributions. But it is an undeniable fact that the most safety organizations will not be supported by an industry whose very existence depends on maintaining and improving public safety.

For, as the Foundation itself points out so well in its prospectus:

"Every fatal accident, as any type of accident, takes the public's imagination out of focus and causes economic losses, experienced in any other field of investigation. The public continues to associate flying with danger even when the safety achieved in certain forms of living is good, such as the scope of the scheduled airline. The public demand for greater safety in flying is answered only by the aviation industry's desire to improve it. But the best effort is not yet good enough."

"The Flight Safety Foundation will wage a strong, continuous safety campaign without reflecting publicity, and an organization with the aviation industry. It will conduct safety research and establish an aviation center where safety education and safety knowledge will be coordinated, accumulated and disseminated throughout the industry. It will continue to support the public with current safety positions and proved safety developments in aviation. The ultimate result of the Foundation's safety activities should be to strengthen public confidence in aviation."

There has never been a coordination of safety efforts between or among industry, government, and research agencies, and a pooling of safety resources is lacking.

Generally, as a group, the scheduled airlines have been more aggressive and alert to safety than the lightplane industry, but the traditional conservatism of the aviation firms to work slowly together has kept much to be desired in exchanging detailed information. Significantly, the FAA shortly will demand that the various carriers forward their engineering and safety reports to Washington for maximum use of the information. It took a government agency to send the material for its maximum availability. Only a few days ago an outstanding equipment manufacturer has learned from a report in this magazine that a leading carrier had modified the manufacturer's design on all of the airline's transports. It is doubtful that other lines which have been using the same equipment were notified.

In that past there have been some—definitely not all—lightplane manufacturers who were willing to put life service to safety as long as the pecuniary costs were not considered excessive. Sometimes they have considered these expenditures justified if they furnished a truly comfortable, attractive plane that drew under favorable circumstances. They considered such a proposal as capitalizing the aircraft for maximum protection of the owners in event of a crash at beyond the manufacturer's obligation to his customer.

While it is by no means typical today of the last period lightplane industry, in the past too many manufacturers have closed their eyes even to constructive criticism, to such an extent that they have refused to acknowledge serious safety reports from several groups concerning findings of the manufacturers' own aircraft. The stock market changes would bankrupt the company.

Likewise, past standards of flight operation and maintenance have been sloppy. Such groups as the National Aviation Trades Association have made sincere efforts to disseminate worthwhile information, but reliable, coordinated safety findings have been sparse and difficult to dig out.

There are few more general topics of agreement in aviation than government overregulation. The words are usually justified. But the overcaution complements some actions in aviation, as was pointed out by the President's Special Board of Inquiry on Air Safety, that "the industry should welcome the idea of doing its own policing as far as safety is concerned. It would be a step away from bureaucracy."

So, because of the keen competition between manufacturers, between the air carriers, and among the fixed base operators, past suggestions for pooling safety information have been greeted only "Why should we give away our know-how to our competitors?"

The problem was put well by Miles W. Arnold, airline industry representative on the President's Special Board:

"As the study of the problem, there has been evident a serious lack of coordination that characterizes efforts in this field. This lack is not essential but is rather the natural result of activity tentatively emanating from different sources. Various aspects of the problem were being explored by different federal agencies as well as the industry, but no concerted program in the making with definite objectives and with each unit despatched to develop the phase that it knows best, nor is there any coordinating research budget provided for the problem common to the whole industry. Moreover, the solution of the known in aviation is only to a minor extent that of regulation and of governmental restriction. The prime solution will derive from inside, and the convenience of the fact we demonstrate that coordination is essential on a common problem is of the highest value."

Certainly, as the independent, nonprofit Foundation there is hope for a coordinating agency sympathetic to both industry and the public welfare, which can be treated as an impartial research body and information exchange.

The new Flight Safety Foundation is not the single answer to all air safety, and the other excellent groups at work on various special phases are needed for an all-out and continuing effort to save lives. The new organization must have been not founded and to reach its maximum value to aviation.

But there is every indication that here aviation has a public spirited group of men of experience and integrity who know the problems of aviation as well as their industry. They are independent, possibly in safety itself, who have no tie to gain. Aviation could find few more men it could better trust for this important but almost featureless task than Jerome Lederer, its president; Elmer De Haven, vice president, who has served on highly sensitive work at the Civil-Airway Research Project at Cornell University; Eugene Verne, president emeritus, formerly with the Aircraft Industries Association and Laclede Aircraft Corp.; and Paul M. Pitts, Jr., chief of the well-known branch of the Army Medical Laboratory at Wright Field, Eugene F. De Bort, chairman; Richard T. Crane, vice chairman; Melvin Gough of Johns Hopkins; David K. Morrison, secretary, and the other associates.

ROBERT H. WOOD



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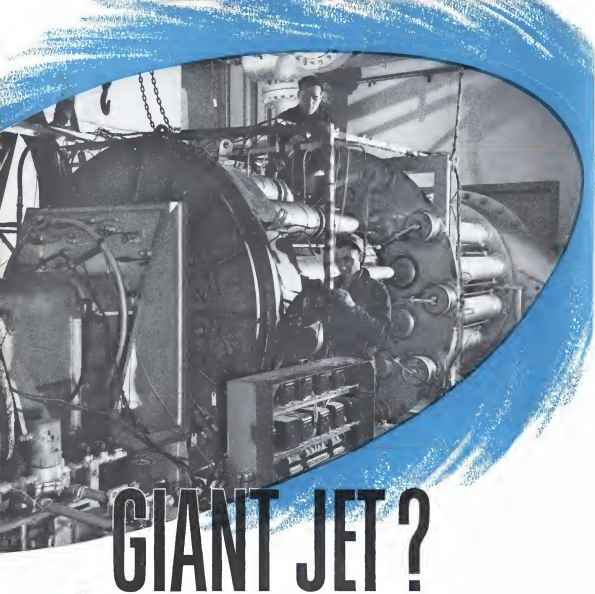
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This huge structure is not an oversize jet engine, although the resemblance is striking. Actually it's the modern test stand for jet engine turbine elements at General Electric's new jet aircraft gas turbine laboratory in Lynn, Mass., where turbines as large as 30,000 horsepower will be tested under simulated operating conditions.

This fine laboratory is part of the \$25,000,000 center for the development, testing and production of aircraft jet engines. The new facilities are the largest and most outstanding of their kind, and constitute part of G.E.'s long-range program in the jet propulsion field—a program started when General Electric built the first jet engine for the Air Force.

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